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ABSTRACT

Designed to improve industrial education programs through the development of minimum uniform quality standards, a project developed a task list, educationally sequenced the identified tasks, and developed a recommended shop layout and equipment list for four occupational areas: diesel repair, appliance repair, office machine repair, and small engine repair. Inservice training on use of the materials and development of student materials was provided for teachers. Other activities included collecting current materials, practices, and procedures for certain program areas and incorporating activities to eliminate sex bias and sex-role stereotyping. (Appendixes and supplements amount to well over nine-tenths of the report. Inventories for the four occupational areas which were sent to incumbent workers to survey background information, equipment lists, and task lists are appended. The supplements provide other project products: a sample small engine module for teacher development, listing of auto mechanics and tractor mechanics modules adaptable to diesel, initial status report on diesel equipment repair programs, list of nineteen diesel and fifty auto/diesel modules developed and program sequence master sheets for small engine repair with objectives and module titles for forty-seven modules, and air conditioning modules adaptable to appliance repair. A program sequence master sheet for masonry was produced but is not included. (YLB)

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ANNUAL REPORT

Program Improvement Project For Industrial Education

by

BEST COPY AVAILABLE

Bruce W. Shaeffer
Project Director

KY781320!

June, 1979
Curriculum Development Center
University of Kentucky
40503

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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Project Number V28880(4406)

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COMMONWEALTH OF KENTUCKY
STATE DEPARTMENT OF EDUCATION
BUREAU OF VOCATIONAL EDUCATION

CE 024 203

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AGREEMENT OF NONDISCRIMINATION

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HOW SEX-EQUITY WAS INSURED

All developed materials were edited following approved guidelines of the Curriculum Development Center and the Bureau of Vocational Education that insure that all sex biased statements are deleted or revised.

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Appendix A. Diesel Occupational Inventory

Appendix B. Appliance Repair Occupational Inventory

Appendix C. Office Machine Repair Occupational Inventory

Appendix D. Small Engine Repair Occupational Inventory

1. Sample of Small Engine Module to be Developed by Teachers.

2. Listing of Auto Mechanics and Tractor Mechanics Modules Adaptable to Diesel.

3. Initial Status Report on Diesel Equipment Repair.

4. Listing of Diesel Modules Developed.

5. Program Sequence Master Sheet for Small Engine Repair.

6. Program Sequence Master Sheet for Air Conditioning Modules Adaptable to Appliance Repair.

7. Listing of Auto/Diesel Modules Developed.

INTRODUCTION

The development of program standards has long been a goal to be achieved in Kentucky's industrial education system. Programs have traditionally developed around teacher strengths and in many cases this has meant sacrificing those instrucitonal areas not specific to the instructor's work experiences. The results of such a development process, has meant that considerable variance develops from one program to the next, within an occupational area.

In Kentucky, the approach to curriculum improvement and thus development of program standards, is the C.B.V.E. plan for Kentucky. This approach includes the participation in the V-TECS consortium, developing individualized modules, providing inservice training for personnel using the materials and providing a limited amount of materials and equipment to support the program. However, it is obvious to vocational leaders that this plan is involved and that it will be several years before needed materials can be developed in all of the programs in Industrial Education.

Diesel Mechanics and Appliance Repair are two areas that contain considerable variance among programs. In addition, these areas have been largely affected due to technological change. Thus, there exists much difference in what is being taught and in how it is being taught.

In Diesel Mechanics for example, some programs are a part of a traditional auto mechanics course while others function independently not capitalizing on the similarities. Regional diesel industry spokesmen have been quoted as saying some current programs are not geared to meet the present day diesel manpower demands. As for the Appliance Repair programs, many have made a transition from a minor/major repair concept to a total major concept with some programs changing to Air Conditioning while others resemble Refrigeration Repair.

In conclusion, it is the Industrial Education Unit's impression that these two areas are prime targets for the improvement project. In addition, it is the intention of the personnel in the Industrial Education Unit, Bureau of Vocational Educaiton, that the primary purpose of this effort will be to improve the curriculum (products and practices) with emphasis on development of minimum uniform quality standards for the described areas of Industrial Education.

ABSTRACT

Title of Project: Program Improvement in Industrial Education. Phase II.

Project Duration: 14 months 1 May 78 - 30 June 79.

Objectives: Improvement of programs through the development of minimum uniform quality standards. Development of a sequenced task list, model shop layout and recommended equipment list. Provide in-service training in the use of these tasks in the instructional programs. Provide for the collection of materials, practices, and procedures for additional Industrial Education areas. Incorporate activities to eliminate sex bias or sex role stereotyping.

Procedure: This project was operated in two phases, Phase I Feb. 1 thru June 30, 1978, resulted in the development of a task list for 2 occupational areas with resulting inservice designed to instruct the teachers in the development and use of student materials. Phase II July 1, 1978 thru June 30, 1979 resulted in task development in 2 other areas of Industrial Education. Materials development workshops were held for all areas dealt with in both Phase I and Phase II of the project.

Contribution to Education: Updated several program areas not scheduled for VTECS development due to the relatively small number of programs in the state.

Products Developed: Sequenced task list for diesel repair, appliance repair, office machine repair, and small engine repair. Equipment list for diesel repair, appliance repair, office machine repair, and small engine repair. Model shop layout for diesel repair, appliance repair, office machine repair, and small engine repair. 19 modules for diesel repair. List of air conditioning and refrigeration modules applicable to appliance repair. Program sequence master sheet for small engine repair.

Drafts for fifty (50) competency based instructional modules for Auto/Diesel program.

ACTIVITIES AND ACCOMPLISHMENTS

The project was designed to improve Industrial Education programs through the development of minimum uniform quality standards:

1. Developing a task list.
2. Educationally sequencing the identified tasks.
3. Developing a recommended shop layout.
4. Developing a recommended equipment list.
5. Providing inservice training for teachers.
6. Collecting current materials, practices, and procedures for certain program areas.
7. Incorporating activities to eliminate sex bias and sex role stereotyping.

The task lists were developed by consolidating lists submitted by incumbent teachers, then sending the consolidated listings to workers in the appropriate industry. The returned questionaires were validated and the necessary additions and deletions were made to the task lists. (See appendices A, B, C)

The recommended equipment lists were developed in the same manner, and were included in the questionaires sent out to the incumbent workers in the appropriate industry. (See appendices A, B,C)

The recommended shop layouts were developed by the incumbent teachers, by taking an average size shop layout and locating all the recommended equipment, plus the necessary space for sufficient work stations.

In the four program areas, the teachers were given in-service training on the use of the developed materials, and encouraged to continue developing student materials. In addition to the planned materials, the project produced:

1. 19 competency based instructional modules in the Hydroulic and Electric Blocks of Heavy Diesel Repair.

2. A program sequence master sheet for Small Engine Repair, with objectives and module titles for 47 competency based instructional modules.

3. Draft copies of a series of Auto-Diesel modules for updating existing Auto Mechanics programs.

4. A program sequence master sheet for Masonry with objectives and module titles for 52 competency based instructional modules.

DISSEMINATION ACTIVITIES

280 Task booklets for Diesel sent to incumbent workers for validation.

200 Task booklets for Appliance Repair sent to incumbent workers for validation.

Diesel teachers received:

1. Sequenced task list.
2. Recommended equipment list.
3. Model shop layout.
4. Copies of 19 competency based instructional modules.

Appliance Repair and Office Machine Repair teachers received:

1. Sequenced task list.
2. Recommended equipment list.
3. Model shop layout.
4. List of Air Conditioning and Refrigeration modules applicable to Appliance Repair.

Small Engine teachers received:

1. Sequenced task list.
2. Recommended equipment list.
3. VTECS catalog of objectives.
4. Set of Small Engine slides. (AAVIM)
5. Set of Small Engine transparency masters. (AAVIM)
6. Vol. I and Vol. II Small Engine Manuals. (AAVIM)
7. Small Engine Repair Curriculum. (MAVCC)
8. Motorcycle Repair Curriculum. (MAVCC)
9. Outboard Motor Repair Curriculum. (MAVCC)

Teachers in all four areas were given in-service training on the use of the materials and in developing further student materials for use in their classrooms.

Appendix A

DIESEL OCCUPATIONAL INVENTORY

JOB INVENTORY TASK LIST FOR

DIESEL MECHANICS

The attached questionnaire is divided into three parts--background information, equipment list and a task list. Your answers will be combined with many others to be used as a group analysis; no reference will be made to your individual answers. Please fill out the background information completely before going on to the other lists. All information obtained from the questionnaire will be kept in strict confidence.

D I R E C T I O N S

PART 1: IS THE BACKGROUND INFORMATION SHEET. IT LOOKS LIKE THE PAGE TO THE RIGHT. YOUR ANSWERS WILL BE COMBINED WITH MANY OTHERS FROM THE FIELD OF DIESEL MECHANICS. NO REFERENCE WILL BE MADE TO YOUR INDIVIDUAL ANSWERS.

ALL INFORMATION YOU GIVE WILL BE KEPT IN STRICT CONFIDENCE.

FIRST STEP: PLEASE FILL IN THE BACKGROUND INFORMATION SHEET WHICH FOLLOWS THIS PAGE.

BACKGROUND INFORMATION

FOR OFFICE USE ONLY

PROJECT IDENTIFIER: V-28880	(01-04)	01
BOOKLET NUMBER:	(05-08)	
O. E. CODE: 17.1200	(09-14)	
D. O. T. CODE: 625.281-010	(15-23)	

PLEASE PRINT ALL REQUESTED INFORMATION

NAME: John Doe	(24-55)	
ADDRESS: Route #2 Anywhere Kentucky 01010	[illegible]	
SEX: M [X] F [ ]	(01)	02
TOTAL TIME ON JOB: 17 YRS 5 MONTHS	(02-04)	
TOTAL TIME IN CAREER FIELD: 30 YRS MONTHS	(05-07)	
PRESENT POSITION OR JOB TITLE: Diesel Mechanic	(08-29)	
NUMBER SUPERVISED: none	(30-31)	
NAME AND ADDRESS OF EMPLOYER: Ace Trucking Co. Somewhere, KY	(32-55) (56-75)	

BACKGROUND INFORMATION

FOR OFFICE USE ONLY

PROJECT IDENTIFIER: V28880	(01-04)	01
BOOKLET NUMBER:	(05-08)	
O. E. CODE: 17.1200	(09-14)	
D. O. T. CODE: 625.281-010	(15-23)	

PLEASE PRINT ALL REQUESTED INFORMATION

NAME:	(24-55)	
ADDRESS:	(56-75)	
SEX: M ☐ F ☐	(01)	02
TOTAL TIME ON JOB: YRS MONTHS	(02-04)	
TOTAL TIME IN CAREER FIELD: YRS MONTHS	(05-07)	
PRESENT POSITION OR JOB TITLE:	(08-29)	
NUMBER SUPERVISED:	(30-31)	
NAME AND ADDRESS OF EMPLOYER:	(32-55)	
	(56-75)	

DIRECTIONS

PART 2: IS THE EQUIPMENT LIST. IT LOOKS LIKE THE PAGE AT THE RIGHT. PLEASE PLACE A CHECK MARK BY EACH PIECE OF EQUIPMENT YOU USE IN YOUR CURRENT JOB.

PLEASE TURN TO THE NEXT PAGE AND COMPLETE THE EQUIPMENT LIST.

BACKGROUND INFORMATION (CONTINUED)

Check the Tools and Equipment You Use in Your Current Assignment.

1. ___Amprobe, clamp-on
2. ✓ Analyzer, harmetic
3. ✓ Anvil, 100#
4. ___Bench, work
5. ✓ Soldering
6. ___Cart, appliance 2-wheel
7. ✓ Cart, appliance 4-wheel
8. ✓ Charging station, vacuum pump
9. ✓ Drill, electric
10. ___Drill bits, high speed set
11. ✓ Drill bits, letter A-Z
12. ✓ Drill press, 15"
13. ✓ Grinder, 6"
14. ✓ Growler, armature
15. ✓ Leak detector, electronic
16. ✓ Manometer, mercury, closed end
17. ___Meter, AC-DC thermal
18. ✓ Micrometer, 0-1"
19. ✓ Oxy-acetylene outfit, complete
20. ✓ Press, arbor
21. ✓ Pump, vacuum
22. ___Recorder, temperature
23. ✓ Tools, specialized
24. ___Tap & die set, NF, NC, & metric
25. ✓ Torch outfit, pres-to-lite
26. ___Trainer, air conditioning
27. ✓ Trainer, dryer
28. ✓ Trainer, washer
29. ___Tube benders
30. ✓ Vise, machinist
31. ✓ Washer, parts
32. ✓ Air compressor, 175 PSI 4 cu. ft. per. min.
33. ___Bearing puller, two-jaw
34. ✓ Bearing puller, three-jaw
35. ✓ Bearing tool, motor
36. ✓ Burner, pencil type
37. ✓ Burner, utility type
38. ___Chisels, cold
39. ✓ Chisels, rivet shear
40. ✓ Clamps, "C"
41. ✓ Extractor, screw
42. ✓ Files, crosscut
43. ✓ Files, flat bastard
44. ___Files, half round bastard
45. ✓ Files, mill
46. ✓ Files, warding
47. ___First aid kit, OSHA
48. ✓ Flaring & cutting, kit

BACKGROUND INFORMATION (CONTINUED)

Check the Tools and Equipment You Use in Your Current Assignment.

1. ___Air impact motors, 1/2", 5/8" and 1" drives
2. ___Aligner, connecting rod
3. ___Alternator set universal Sat 670 Sun 6, 12, 24, 36V
4. ___Anvil
5. ___Armature growler
6. ___Bars, rolling head pry
7. ___Bars, wrecking 6'
8. ___Batteries
9. ___Battery charger, heavy duty with high boost 12 and 24V Fox
10. ___Battery fillers
11. ___Battery terminal cleaner
12. ___Bench or pedestal grinder buffer
13. ___Blow guns adapatable to air hoses
14. ___Bushing driver sets, diesel
15. ___Caliper, inside and outside
16. ___Chisels
17. ___Cleaner, piston groove
18. ___Comparator
19. ___Compressor, valve spring
20. ___Creepers, rollers
21. ___Cutter, bolt
22. ___Depth micrometer
23. ___Dial indicators
24. ___Diesel compression tester
25. ___Dresser, grinding wheel
26. ___Drill, motor, portable, 1/4", 3/8", 1/2", 3/4" and 1"
27. ___Drill press heavy duty 1" cap
28. ___Dynamometer
29. ___Electric etching tool marker
30. ___Engine position stands with adapter plates
31. ___Expanding reamer set, diesel
32. ___Extension cords
33. ___Extension lights, 3 conductors
34. ___Face shields
35. ___Feeler gauges
36. ___Files, assorted
37. ___Fire extinguishers
38. ___Flow control crankcase fillers
39. ___Fuel pump tester
40. ___Galvanized radiator filler
41. ___Gap gauges
42. ___Gauge, fuel pressure
43. ___Gauge, vacuum
44. ___Hacksaw frames and blades
45. ___Hammers, mallets, and sledges

BACKGROUND INFORMATION (CONTINUED)

Check the Tools and Equipment You Use in Your Current Assignment.

46. ___Hand grease guns, lever action
47. ___Hand oilers, trigger actuated
48. ___Heavy duty booster cables
49. ___Heavy duty electrical arc welder
50. ___Hones, cylinder
51. ___Hydraulic jack, 10-ton floor
52. ___Hydraulic jack, 4-ton floor
53. ___Hydraulic jack, 20-ton portable hand
54. ___Hydraulic sleeve puller-installer
55. ___Hydraulic system tester
56. ___Hydraulic ram puller-installer
57. ___Hydraulic roll bed press and attachments
58. ___Hydrometer
59. ___Injector adjusting tools
60. ___Injector nozzle tester
61. ___Jack stands, 5-ton
62. ___Lathe 10"
63. ___Lubrication equipment, hoses and fittings
64. ___Micrometers 0-6" inside and outside
65. ___Mobile floor crane 5000#
66. ___Mobile hydraulic transmission jack and attachments
67. ___Overhead traveling hoist, full shop track
68. ___Oxyacetylene burning and welding set
69. ___Parts cleaning equipment, hot acid and solvent
70. ___Pliers, brake spring
71. ___Pliers, channel lock
72. ___Pliers, diagonal cutters
73. ___Pliers, hose clamp
74. ___Pliers, needle nose, straight and offset
75. ___Pliers, retaining ring
76. ___Pliers, slip joint
77. ___Pliers, snap ring
78. ___Portable grinder-sander, air operated
79. ___Puller set, universal
80. ___Punch sets
81. ___Reamer, ridge
82. ___Ring compressors and expanders
83. ___Screwdrivers, all types
84. ___Self-aligning reamer set, diesel
85. ___Soldering guns and irons
86. ___Spanner wrenches and crows feet

BACKGROUND INFORMATION (CONTINUED)

Check the Tools and Equipment You Use in Your Current Assignment.

87. ___Spring tester
88. ___Steam cleaner
89. ___Tachometer, dwellmeter
90. ___Tap and die sets, NC & NF and metric
91. ___Telescopic gauges, 0-6"
92. ___Timing gauges, assorted
93. ___Tinner's snips
94. ___Tool cabinets and chest truck
95. ___Torque multiplier
96. ___Tube benders
97. ___Tube cutting and flaring kits
98. ___Twist drill set
99. ___Two pull life chain hoists (lifting slings)
100. ___Universal clutch aligning set, heavy duty
101. ___Valve lifters, "C" clamp and stubby
102. ___Valve shop, Toledo-Hall
103. ___Vises
104. ___Wire brush
105. ___Work benches
106. ___Wrenches, adjustable, chain
107. ___Wrenches, adjustable, open-end
108. ___Wrenches, adjustable, pipe
109. ___Wrench set, Allen, metric and standard
110. ___Wrench set, combination, 1/32" graduation from 5/16" to 1 1/4"
111. ___Wrench set, combination, 1 5/16"-2"
112. ___Wrench set, flare-nut large size
113. ___Wrench set, ignition
114. ___Wrench set, socket 1" drive to 3"
115. ___Wrench set, socket 1/4" drive to 2 1/2"
116. ___Wrench set, socket 1/2" drive to 1 1/4"
117. ___Wrench set, socket 3/8" drive to 7/8"
118. ___Wrench set, socket 1/4" drive to 1/2"
119. ___Wrench torque in. lb. 3/8 dr 0-300
120. ___Wrench torque ft. lb 1/2 dr 0-250
121. ___Wrench torque ft. lb 3/4 dr 0-600

D I R E C T I O N S

PART 3: IS THE TASK LIST. WE NEED TO KNOW TWO THINGS. (1) THE TASKS YOU PERFORM, AND (2) THE TIME YOU SPEND PERFORMING THEM.

STEP 1: AS YOU READ EACH TASK, PLACE A CHECK MARK BESIDE EACH TASK THAT YOU DO IN YOUR PRESENT JOB. DO THIS STEP NOW. WHEN YOU FINISH, COME BACK TO STEP 2.

STEP 2: NOW YOU ARE TO RATE THE RELATIVE AMOUNT OF TIME YOU SPEND PERFORMING EACH TASK. RELATIVE TIME SPENT MEANS THE TOTAL TIME YOU SPEND DOING THE TASK COMPARED WITH THE TIME YOU SPEND ON EACH OF THE OTHER TASKS OF YOUR PRESENT JOB. USE A SCALE OF "1" TO "7". USE A "1" IF YOU SPEND VERY MUCH BELOW AVERAGE TIME ON A TASK. USE A "2" FOR "BELOW AVERAGE" AND SO ON, UP TO A RATING OF "7" IF YOU SPEND VERY MUCH ABOVE AVERAGE AMOUNT OF TIME ON THE TASK.

[illegible] INVENTORY
(DUTY-TASK LIST) | Page of Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

A. ORIENTATION		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Compute wages plus commission	1	✓	1	(1:14)
2. Maintain inventory of repair parts	2	✓	3	(15)
3. Complete work orders	3	✓	3	(16)
[illegible]ep time card	4	✓	1	(17)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				
B. MAINTAINING TOOLS AND EQUIPMENT				
1. Cut threads with taps and dies	5	✓	6	(18)
2. Dress a grinding wheel	6	✓	5	(19)
3. Measure with calipers	7	✓	3	(20)
4. Measure with micrometers	8	✓	7	(21)
5. Measure with thickness gauge	9	✓	4	(22)
6. Measure threads with thread gauge	10			(23)
7. Cut rivets with air chisel	11	✓	2	(24)

JOB INVENTORY (DUTY-TASK LIST)		Page 1 of 15 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

A. COMPLETING CLERICAL TASKS		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Complete work orders	1			(1:14)
2. Compute wages plus commission	2			(15)
3. Keep time card	3			(16)
4. Maintain inventory of repair parts	4			(17)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				
B. MAINTAINING TOOLS AND EQUIPMENT				
1. Calibrate a vernier caliper	5			(18)
2. Calibrate micrometers	6			(19)
3. Calibrate torque wrench	7			(20)
4. Clean and oil thickness gauge	8			(21)
5. Cut threads with taps and dies	9			(22)
6. Dress a grinding wheel	10			(23)

JOB INVENTORY (DUTY-TASK LIST)		Page 2 of 15 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

B. MAINTAINING TOOLS AND EQUIPMENT (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
7. Remove broken fasteners with screw extractors	11			(1:24)
8. Reshape cold chisel with bench grinder	12			(25)
9. Service air chisel	13			(26)
10. Service hoist	14			(27)
11. Service hydraulic press	15			(28)
12. Service impact wrench	16			(29)
13. Service parts washer	17			(30)
14. Service pneumatic tire changer	18			(31)
15. Sharpen a twist drill	19			(32)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

JOB INVENTORY (DUTY-TASK LIST)		Page 3 of 15 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

C. MAINTAINING ENGINES AND ENGINE SYSTEMS		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Adjust valve clearance	20			(1:33)
2. Align connecting rods	21			(34)
3. Bleed fuel system	22			(35)
4. Change engine oil and filter	23			(36)
5. Disassemble and inspect cylinder head	24			(37)
6. Grind rocker arms and tappets	25			(38)
7. Grind valves	26			(39)
8. Grind valve seats	27			(40)
9. Replace belts and hoses	28			(41)
10. Replace coolant	29			(42)
11. Replace exhaust manifold	30			(43)
12. Replace exhaust pipe	31			(44)
13. Replace fuel injection pumps	32			(45)
14. Replace fuel injectors	33			(46)
15. Replace muffler	34			(47)
16. Replace oil pump and bushing	35			(48)
17. Replace thermostat	36			(49)
18. Replace water pump	37			(50)

JOB INVENTORY (DUTY-TASK LIST)		Page 4 of 15 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

C. MAINTAINING ENGINES AND ENGINE SYSTEMS (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
19. Service fuel tank and lines	38			(1:51)
20. Service intake systems	39			(52)
21. Service radiator and cap	40			(53)
22. Service shutterstat and shutters	41			(54)
23. Service turbo chargers and blowers	42			(55)
24. Analyze rebuilt engine on dynamometer	43			(56)
25. Rebuild short block	44			(57)
26. Recondition spark plug threads	45			(58)
27. Replace cylinder head	46			(59)
28. Replace engine	47			(60)
29. Remove cylinder ring ridge	48			(61)
30. Replace camshaft and bearings	49			(62)
31. Replace core-hole plugs	50			(63)
32. Replace crankshaft and bearings	51			(64)
33. Replace cylinder liners	52			(65)
34. Replace flywheel and ring gear	53			(66)
35. Replace fuel filters	54			(67)
36. Replace pistons and rings	55			(68)

JOB INVENTORY (DUTY-TASK LIST)		Page 5 of 15 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

C. MAINTAINING ENGINES AND ENGINE SYSTEMS (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
37. Replace timing chain and gears	56			(1:69)
38. Replace valve guides and install oil seals	57			(70)
39. Replace valve seats	58			(71)
40. Replace vibration damper	59			(72)
41. Service oil coolers	60			(73)
42. Service water filter and inhibitor	61			(74)
43. Adjust oil pressure	62			(75)
44. Repair governors	63			(76)
45. Test cylinder balance	64			(77)
46. Test cylinder compression	65			(78)
47. Test engine vacuum	66			(79)
48. Test fuel pump pressure	67			(80)
49. Tune up diesel engine	68			(2:1)
50. Tune up gasoline engine	69			(2)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

JOB INVENTORY (DUTY-TASK LIST)		Page 7 of 15 Pages

1. Check tasks you perform now (√).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (√) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

D. MAINTAINING POWER TRAINS (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
19. Replace automatic trassmission	88			(2:21)
20. Replace differentials	89			(22)
21. Replace manual transmissions	90			(23)
22. Repair automatic transmission components	91			(24)
23. Replace carrier bearings	92			(25)
24. Replace oil seals in manual transmission	93			(26)
25. Replace oil seals in automatic transmission	94			(27)
26. Replace pillar blocks	95			(28)
27. Replace universal joints	96			(29)
28. Service or replace power divider	97			(30)
29. Service or replace power take off	98			(31)
30. Service automatic transmission filters	99			(32)
31. Change automatic transmission fluid	100			(33)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

JOB INVENTORY (DUTY-TASK LIST)		Page 6 of 15 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

D. MAINTAINING POWER TRAINS		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Adjust automatic transmissions	70			(2:3)
2. Adjust clutch linkage	71			(4)
3. Assemble automatic transmissions	72			(5)
4. Assemble differentials	73			(6)
5. Assemble manual transmissions	74			(7)
6. Check automatic transmission fluid	75			(8)
7. Disassemble and inspect automatic transmissions	76			(9)
8. Disassemble and inspect differentials	77			(10)
9. Disassemble and inspect manual transmissions	78			(11)
10. Identify transmission models	79			(12)
11. Replace clutch components	80			(13)
12. Service axles	81			(14)
13. Service fluid couplings	82			(15)
14. Service hydraulic slave cylinders	83			(16)
15. Service master cylinders	84			(17)
16. Service torque convertors	85			(18)
17. Repair or replace propeller and jack shafts	86			(19)
18. Lubricate differentials	87			(20)

JOB INVENTORY (DUTY-TASK LIST)		Page 8 of 15 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

E. MAINTAINING HYDRAULIC SYSTEMS		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Change hydraulic oil	101			(2:34)
2. Determine total working force developed at a hydraulic piston	102			(35)
3. Repair or replace accumulators	103			(36)
4. Repair or replace hydraulic controls	104			(37)
5. Repair or replace hydraulic pumps	105			(38)
6. Repair or replace valves	106			(39)
7. Inspect reservoirs and coolers	107			(40)
8. Repair or replace hydraulic cylinders	108			(41)
9. Repair or replace hydraulic lines	109			(42)
10. Repair or replace hydraulic motors	110			(43)
11. Repair or replace hydraulic pumps	111			(44)
12. Service hydraulic fluid filters	112			(45)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

JOB INVENTORY (DUTY-TASK LIST)		Page 9 of 15 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

F. MAINTAINING BRAKE SYSTEMS		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Adjust brake bands	113			(2:46)
2. Adjust internal expanding brakes	114			(47)
3. Machine brake drums	115			(48)
4. Machine rotors	116			(49)
5. Rebuild disc brake calipers	117			(50)
6. Rebuild hydraulic master cylinders	118			(51)
7. Rebuild hydraulic wheel cylinders	119			(52)
8. Reline brake bands	120			(53)
9. Replace brake bands	121			(54)
10. Replace brake lines	122			(55)
11. Replace disc pads	123			(56)
12. Replace power units	124			(57)
13. Service air chambers	125			(58)
14. Service air compressor and governor	126			(59)
15. Service air valves, lines and reservoirs	127			(60)
16. Service anti-skid system	128			(61)
17. Service disc brakes	129			(62)
18. Service electric brakes	130			(63)

JOB INVENTORY (DUTY-TASK LIST)		Page 10 of 15 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

F. MAINTAINING BRAKE SYSTEMS (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
19. Service external contracting brakes	131			(2:64)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				
G. MAINTAINING ELECTRICAL SYSTEMS				
1. Boost dead battery with jumper cables	132			(2:65)
2. Charge batteries	133			(66)
3. Locate and replace fuses and fusible links	134			(67)
4. Rebuild A.C. generators	135			(68)
5. Rebuild D.C. generators	136			(69)
6. Replace batteries	137			(70)
7. Replace brushes	138			(71)
8. Replace bushings	139			(72)
9. Replace dash instruments	140			(73)

JOB INVENTORY (DUTY-TASK LIST)		Page 11 of 15 Pages

1. Check tasks you perform now (√).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (√) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE	4 - ABOUT AVERAGE	7 - VERY MUCH ABOVE AVERAGE
2 - BELOW AVERAGE	5 - SLIGHTLY ABOVE AVERAGE	
3 - SLIGHTLY BELOW AVERAGE	6 - ABOVE AVERAGE	

G. MAINTAINING ELECTRICAL SYSTEMS (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
10. Replace field windings	141			(2:74)
11. Replace generators	142			(75)
12. Replace solenoids	143			(76)
13. Replace starter drives	144			(77)
14. Replace starters	145			(78)
15. Replace voltage regulators	146			(79)
16. Service batteries	147			(80)
17. Service electrical accessories	148			(3:1)
18. Service electric shift system	149			(2)
19. Service lighting circuits	150			(3)
20. Test armatures	151			(4)
21. Test batteries	152			(5)
22. Test charging systems	153			(6)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

JOB INVENTORY (DUTY-TASK LIST)		Page 12 of 15 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

H. WELDING		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Arc-weld butt joint	154			(3:7)
2. Braze butt joint	155			(8)
3. Cut metal with cutting torch	156			(9)
4. Heli-arc butt joint	157			(10)
5. Set up and adjust arc-welding machine	158			(11)
6. Set up and adjust oxyacetylene machine	159			(12)
7. Solder leak in radiator	160			(13)
8. Weld butt joint	161			(14)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

JOB INVENTORY (DUTY-TASK LIST)		Page 13 of 15 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

I. MAINTAINING SUSPENSION SYSTEMS		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Align front end	162			(3:15)
2. Balance wheels	163			(16)
3. Lubricate chassis according to lubrication chart	164			(17)
4. Rebuild air assisted steering system	165			(18)
5. Rebuild power steering pumps	166			(19)
6. Replace ball joints	167			(20)
7. Replace coil springs and shock absorbers	168			(21)
8. Replace components of air-bag suspension system	169			(22)
9. Replace final drive sprockets	170			(23)
10. Replace king pins and bushings	171			(24)
11. Replace leaf springs	172			(25)
12. Replace torque arms and beams	173			(26)
13. Replace torsion bars	174			(27)
14. Replace track rollers	175			(28)
15. Replace track sections	176			(29)
16. Replace wheel and roller bearings	177			(30)
17. Replace wheel and tires	178			(31)
18. Service fifth wheel and king pin	179			(32)

JOB INVENTORY (DUTY-TASK LIST)		Page 14 of 15 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

I. MAINTAINING SUSPENSION SYSTEMS (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
19. Service landing gear	180			3:33)
20. Service power steering systems	181			(34)
21. Service slider (tandem)	182			(35)
22. Tighten track tension	183			(36)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				
J. MAINTAINING AIR CONDITIONING AND HEATING SYSTEMS				
1. Add refrigerant oil	184			(37)
2. Evacuate system	185			(38)
3. Recharge system	186			(39)
4. Repair comfort controls	187			(40)
5. Repair or replace compressors	188			(41)
6. Repair or replace condensers	189			(42)

JOB INVENTORY (DUTY-TASK LIST)		Page 15 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

J. MAINTAINING AIR CONDITIONING AND HEATING SYSTEMS (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
7. Repair or replace heater core	190			(3:43)
8. Replace blower motors	191			(44)
9. Replace expansion valves	192			(45)
10. Replace heater hoses and valves	193			(46)
11. Replace receiver dryer	194			(47)
12. Replace vacuum motors	195			(48)
13. Service auxilliary engines	196			(49)
14. Service transport refrigeration systems	197			(50)
15. Trace electrical schematics	198			(51)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

DO THIS STEP NOW

WHEN YOU HAVE COMPLETED ALL YOUR RATINGS, YOU WILL HAVE COMPLETED THE OCCUPATIONAL INVENTORY. YOU SHOULD THEN PLACE IT IN THE SELF-ADDRESSED STAMPED ENVELOPE AND MAIL IT BACK TO US. Thank You

Appendix B

APPLIANCE REPAIR OCCUPATIONAL INVENTORY

JOB INVENTORY TASK LIST FOR

MAJOR APPLIANCE REPAIR

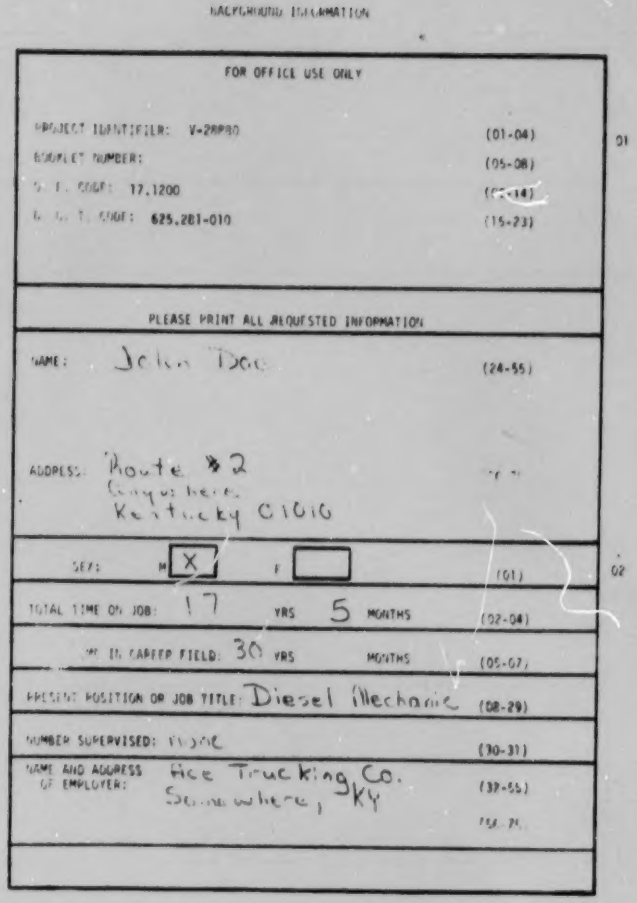
The attached questionnaire is divided into three parts--background information, equipment list and a task list. Your answers will be combined with many others to be used as a group analysis; no reference will be made to your individual answers. Please fill out the background information completely before going on to the other lists. All information obtained from the questionnaire will be kept in strict confidence.

DIRECTIONS

PART 1: IS THE BACKGROUND INFORMATION SHEET. IT LOOKS LIKE THE PAGE TO THE RIGHT. YOUR ANSWERS WILL BE COMBINED WITH MANY OTHERS FROM THE FIELD OF MAJOR APPLIANCE REPAIR. NO REFERENCE WILL BE MADE TO YOUR INDIVIDUAL ANSWERS.

ALL INFORMATION YOU GIVE WILL BE KEPT IN STRICT CONFIDENCE.

FIRST STEP: PLEASE FILL IN THE BACKGROUND INFORMATION SHEET WHICH FOLLOWS THIS PAGE.



BACKGROUND INFORMATION

FOR OFFICE USE ONLY

PROJECT IDENTIFIER: V-28P80 (01-04) 01
BOOKLET NUMBER: (05-08)
O. E. CODE: 17.1200 (09-14)
O. C. C. CODE: 625.281-010 (15-23)

PLEASE PRINT ALL REQUESTED INFORMATION

NAME: John Doe (24-55)

ADDRESS: Route #2
Somewhere
Kentucky 01010

SEX: M [X] F [ ] (01) 02

TOTAL TIME ON JOB: 17 YRS 5 MONTHS (02-04)

TIME IN CAREER FIELD: 30 YRS MONTHS (05-07)

PRESENT POSITION OR JOB TITLE: Diesel Mechanic (08-29)

NUMBER SUPERVISED: None (30-31)

NAME AND ADDRESS OF EMPLOYER: Nice Trucking Co. Somewhere, Ky (32-55)

BACKGROUND INFORMATION

FOR OFFICE USE ONLY

PROJECT IDENTIFIER: V28880-1 (01-04) 01

BOOKLET NUMBER: (05-08)

O. E. CODE: 17.0200 (09-14)

D. O. T. CODE: 827.261-010, 827.261-014, 637.261-010
637.687-010, 637.261-018, 637.684-010
827.661-010, 723.381-010, 723.584-010 (15-23)

PLEASE PRINT ALL REQUESTED INFORMATION

NAME: (24-55)

ADDRESS: (56-75)

SEX: M ☐ F ☐ (01) 02

TOTAL TIME ON JOB: YRS MONTHS (02-04)

TOTAL TIME IN CAREER FIELD: YRS MONTHS (05-07)

PRESENT POSITION OR JOB TITLE: (08-29)

NUMBER SUPERVISED: (30-31)

NAME AND ADDRESS OF EMPLOYER: (32-55)

(56-75)

D I R E C T I O N S

PART 2: IS THE EQUIPMENT LIST. IT LOOKS LIKE THE PAGE AT THE RIGHT. PLEASE PLACE A CHECK MARK BY EACH PIECE OF EQUIPMENT YOU USE IN YOUR CURRENT JOB.

PLEASE TURN TO THE NEXT PAGE AND COMPLETE THE EQUIPMENT LIST.

BACKGROUND INFORMATION (CONTINUED)

Check the Tools and Equipment You Use in Your Current Assignment.

1. ___ Acetone, clamp-on
2. ✓ Analyzer, hermetic
3. ✓ Anvil, 100#
4. ___ Bench, work
5. ✓ Soldering
6. ___ Cart, appliance 2-wheel
7. ✓ Cart, appliance 4-wheel
8. ✓ Charging station, vacuum pump
9. ✓ Drill, electric
10. ___ Drill bits, high speed set
11. ✓ Drill bits, letter A-Z
12. ✓ Drill press, 15"
13. ✓ Grinder, 8"
14. ✓ Growler, armature
15. ___ Leak detector, electronic
16. ___ Manometer, mercury, closed end
17. ___ Meter, AC-DC thermal
18. ___ Micrometer, 0-1"
19. ___ Oxy-acetylene outfit, complete
20. ___ Press, arbor
21. ___ Pump, vacuum
22. ___ Recorder, temperature
23. ✓ Tools, specialized
24. ___ Tap & die set, NF, NC, & metric
25. ✓ Torch outfit, prestolite
26. ___ Trainer, air conditioning
27. ✓ Trainer, dryer
28. ✓ Trainer, washer
29. ___ Tube benders
30. ✓ Vise, machinist
31. ✓ Washer, parts
32. ✓ Air compressor, 17's PSI & over, ft. per. min.
33. ___ Bearing puller, two-jaw
34. ✓ Bearing puller, three-jaw
35. ___ Bearing tool, motor
36. ___ Burner, pencil type
37. ___ Burner, utility type
38. ___ Chisels, cold
39. ___ Chisels, sheet shear
40. ___ Clamps, "C"
41. ___ Extractor, screw
42. ___ Files, crescent
43. ___ Files, flat bastard
44. ___ Files, half round bastard
45. ___ Files, mill
46. ___ Files, warding
47. ___ First aid kit, OSHA
48. ___ Flaring & cutting, kit

BACKGROUND INFORMATION (CONTINUED)

Check the Tools and Equipment You Use in Your Current Assignment.

1. _____Air compressor, 175 PSI 4 cu. ft. per. min.
2. _____Amprobe, clamp-on
3. _____Analyzer, hermetic
4. _____Anvil, 100#
5. _____Battery charger, eliminator
6. _____Bearing puller, two-jaw
7. _____Bearing puller, three jaw
8. _____Bearing tool, motor
9. _____Bench, work
10. _____Burner, pencil type
11. _____Burner, utility type
12. _____Capacitor analyzer
13. _____Cart, appliance 2-wheel
14. _____Cart, appliance 4-wheel
15. _____Charging & testing manifold
16. _____Charging station, vacuum pump
17. _____Chisels, cold
18. _____Chisels, rivet shear
19. _____Clamps, "C"
20. _____Drill, electric
21. _____Drill bits, high speed set
22. _____Drill bits, letter A-Z
23. _____Drill press, 15"
24. _____Extractor, screw
25. _____Files
26. _____First aid kit, OSHA
27. _____Flaring and cutting kit
28. _____Gauge, feeler
29. _____Grinder, 6"
30. _____Growler, armature
31. _____Hacksaw blades, tungsten
32. _____Hacksaw, flush cutting
33. _____Hacksaw, frames
34. _____Hammer, ball pein
35. _____Heat gun, 500 degrees
36. _____Leak detector, electronic
37. _____Leak detector, Halide
38. _____Level, pocket
39. _____Mallet, rawhide
40. _____Manometer, mercury, closed end
41. _____Meter, AC-DC thermal
42. _____Micrometer, 0-1"
43. _____Nut cracker, universal
44. _____Oxyacetylene outfit, complete
45. _____Pinch-off tool
46. _____Pliers, channel lock
47. _____Pliers, diagonal cutting
48. _____Pliers, hose clamp

BACKGROUND INFORMATION (CONTINUED)

Check the Tools and Equipment You Use in Your Current Assignment.

49. _____Pliers, lineman's
50. _____Pliers, mechanics
51. _____Pliers, needle nose
52. _____Pliers, retaining ring
53. _____Pliers, slip joint
54. _____Pliers, vise grip
55. _____Pliers, wire strippers
56. _____Press, arbor
57. _____Puller, gear and wheel
58. _____Pump, vacuum
59. _____Punches
60. _____Recorder, temperature
61. _____Rule, folding type, steel
62. _____Safety cans, 1 gallon
63. _____Screwdrivers
64. _____Screwholding device
65. _____Snips, bulldog
66. _____Snips, notching and shallow arc
67. _____Soldering gun
68. _____Soldering iron, 200 watt
69. _____Steam cleaner
70. _____Squares, steel
71. _____Swaging tool
72. _____Tap and die set, NF, NC, and metric
73. _____Terminal crimper, solderless
74. _____Tester, flashlight
75. _____Tester, pocket
76. _____Thermometer, pocket
77. _____Tools, specialized
78. _____Torch outfit, pres-to-lite
79. _____Trainer, air conditioning
80. _____Trainer, dryer
81. _____Trainer, washer
82. _____Tube benders
83. _____Tube benders, coil spring
84. _____Valve core, removing tool
85. _____Vise, machinist
86. _____Voltmeter
87. _____Volt-ohm-milliammeter
88. _____Washer, parts
89. _____Wrenches, adjustable set
90. _____Wrenches, box end set
91. _____Wrenches, combination set
92. _____Wrenches, nut driver set
93. _____Wrenches, open end set

BACKGROUND INFORMATION (CONTINUED)

Check the Tools and Equipment You Use in Your Current Assignment.

94. _____Wrenches, pipe

95. _____Wrenches, refrigeration service

96. _____Wrenches, socket set

DIRECTIONS

PART 3: IS THE TASK LIST. WE NEED TO KNOW TWO THINGS. (1) THE TASKS YOU PERFORM, AND (2) THE TIME YOU SPEND PERFORMING THEM.

STEP 1: AS YOU READ EACH TASK, PLACE A CHECK MARK BESIDE EACH TASK THAT YOU DO IN YOUR PRESENT JOB. DO THIS STEP NOW. WHEN YOU FINISH, COME BACK TO STEP 2.

STEP 2: NOW YOU ARE TO RATE THE RELATIVE AMOUNT OF TIME YOU SPEND PERFORMING EACH TASK. RELATIVE TIME SPENT MEANS THE TOTAL TIME YOU SPEND DOING THE TASK COMPARED WITH THE TIME YOU SPEND ON EACH OF THE OTHER TASKS OF YOUR PRESENT JOB. USE A SCALE OF "1" TO "7." USE A "1" IF YOU SPEND VERY MUCH BELOW AVERAGE TIME ON A TASK. USE A "2" FOR "BELOW AVERAGE" AND SO ON, UP TO A RATING OF "7" IF YOU SPEND VERY MUCH ABOVE AVERAGE AMOUNT OF TIME ON THE TASK.

JOB IDENTIFY (DUTY OR TASK)			Page ___ of ___ Pages	
1. Check tasks you perform now (✓). 2. Add any tasks you do now which are not listed. 3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.				
TIME SPENT SCALE 1 - VERY MUCH BELOW AVERAGE 4 - ABOUT AVERAGE 7 - VERY MUCH ABOVE AVERAGE 2 - BELOW AVERAGE 5 - SLIGHTLY ABOVE AVERAGE 3 - SLIGHTLY BELOW AVERAGE 6 - ABOVE AVERAGE				
A. ORIENTATION		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Compute wages plus commission	1	✓	1	(1:14)
2. Maintain inventory of repair parts	2	✓	3	(15)
3. Complete work orders	3	✓	3	(16)
4. Keep time card	4	✓	1	(17)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				
B. MAINTAINING TOOLS AND EQUIPMENT				
1. Cut threads with taps and dies	5	✓	6	(18)
2. Dress a grinding wheel	6	✓	5	(19)
3. Measure with calipers	7	✓	3	(20)
4. Measure with micrometers	8	✓	7	(21)
5. Measure with thickness gauge	9	✓	4	(22)
6. Measure threads with thread gauge	10			(23)
7. Cut rivets with air chisel	11	✓	2	(24)

12

JOB INVENTORY (DUTY-TASK LIST)		Page 1 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

A. COMPLETING CLERICAL TASKS		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Complete work orders	1			(1:14)
2. Compute wages plus commission	2			(15)
3. Keep time card	3			(16)
4. Maintain inventory of repair parts	4			(17)
5. Prepare estimate of cost for repairs	5			(18)
6. Receive payment and make change	6			(19)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				
B. MAINTAINING TOOLS AND EQUIPMENT				
1. Calibrate micrometers	7			(1:20)
2. Calibrate volt-ohm-milliammeter	8			(21)
3. Cut threads with taps and dies	9			(22)
4. Dress a grinding wheel	10			(23)

JOB INVENTORY (DUTY-TASK LIST)		Page 2 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

B. MAINTAINING TOOLS AND EQUIPMENT (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
5. Lubricate air compressor	11			(1:24)
6. Sharpen cold chisel with grinder	12			(25)
7. Remove broken fasteners with screw extractors	13			(26)
8. Replace seals on charging equipment	14			(27)
9. Service a drill press	15			(28)
10. Sharpen a twist drill	16			(29)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				
C. PERFORMING BASIC ELECTRICAL TASKS				
1. Check and replace fuses and circuit breakers	17			(1:30)
2. Compare voltage drop on new and used dry cells	18			(31)
3. Construct a parallel circuit	19			(32)
4. Construct a series circuit	20			(33)

JOB INVENTORY (DUTY-TASK LIST)		Page 3 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

C. PERFORMING BASIC ELECTRICAL TASKS (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
5. Construct a series-parallel circuit	21			(1:34)
6. Install wire terminals	22			(35)
7. Install wiring for appliances	23			(36)
8. Measure amps with ammeter	24			(37)
9. Measure amps with milliammeter	25			(38)
10. Measure copper wire	26			(39)
11. Measure resistance with ohmmeter	27			(40)
12. Measure voltage with voltmeter	28			(41)
13. Replace duplex receptacle or switch	29			(42)
14. Solder connections	30			(43)
15. Splice broken wire with bell hangers	31			(44)
16. Test a parallel circuit with VOM	32			(45)
17. Test a series circuit with VOM	33			(46)
18. Test a series-parallel circuit with VOM	34			(47)
19. Test a storage battery	35			(48)
20. Test electric motors	36			(49)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

JOB INVENTORY (DUTY-TASK LIST)		Page 4 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

D. SERVICING ELECTRIC RANGES		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Install supply cord	37			(1:50)
2. Replace ballast transformer	38			(51)
3. Replace oven heating element	39			(52)
4. Replace surface unit	40			(53)
5. Replace surface unit switch on	41			(54)
6. Replace and calibrate thermostat	42			(55)
7. Replace timer	43			(56)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				
E. SERVICING ELECTRIC WATER HEATERS				
1. Replace heating element	44			(57)
2. Replace thermostat	45			(58)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

JOB INVENTORY (DUTY-TASK LIST)		Page 5 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

E. SERVICING ELECTRIC WATER HEATERS (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
F. SERVICING ELECTRIC DRYERS				
1. Replace blower	46			(1:59)
2. Replace capacitor on motor	47			(60)
3. Replace circuit breaker	48			(61)
4. Replace drive belt	49			(62)
5. Replace heating element	50			(63)
6. Replace motor	51			(64)
7. Replace safety switch	52			(65)
8. Replace shaft bearing	53			(66)
9. Replace thermostat	54			(67)
10. Replace timer	55			(68)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

JOB INVENTORY (DUTY-TASK LIST)		Page 6 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

G. SERVICING AUTOMATIC WASHERS		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Adjust water level pressure switch	56			(1:69)
2. Rebuild drain pump	57			(70)
3. Replace circuit breaker	58			(71)
4. Replace drain pump	59			(72)
5. Replace electric motor	60			(73)
6. Replace filler hose	61			(74)
7. Replace lid switch	62			(75)
8. Replace start capacitor	63			(76)
9. Replace timer	64			(77)
10. Replace transmission	65			(78)
11. Replace wash basket and center boot seal	66			(79)
12. Replace water injection nozzle	67			(80)
13. Replace water inlet hose	68			(2:1)
14. Replace water inlet valve	69			(2)
15. Replace water level pressure switch	70			(3)
16. Replace water temperature switch	71			(4)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				(5)

JOB INVENTORY (DUTY-TASK LIST)		Page 7 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

G. SERVICING AUTOMATIC WASHERS (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
H. SERVICING WRINGER WASHING MACHINES				
1. Rebuild drain pump	73			(2:6)
2. Replace agitator drive pinion	74			(7)
3. Replace centrifugal motor starting switch	75			(8)
4. Replace drain pump	76			(9)
5. Replace gear case assembly	77			(10)
6. Replace tub	78			(11)
7. Replace wringer gear case	79			(12)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

JOB INVENTORY (DUTY-TASK LIST)		Page 8 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

I. SERVICING GARBAGE DISPOSALS		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Replace control switch	80			(2:13)
2. Replace motor	81			(14)
3. Replace reset switch	82			(15)
4. Replace reversing toggle switch	83			(16)
5. Replace water flow interlock	84			(17)
J. SERVICING DISHWASHERS				
1. Replace dishwasher heating element	85			(18)
2. Replace dishwasher motor and drain pump	86			(19)
3. Replace dishwasher tub impeller	87			(20)
4. Replace timer	88			(21)
Note: If any tasks you perform under this duty are note listed, write them in the blank spaces below.				

JOB INVENTORY (DUTY-TASK LIST)		Page 9 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
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3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
K. SERVICING SPACE HEATERS				
1. Replace fan motor	89			(2:22)
2. Replace heating elements	90			(23)
3. Replace supply cord	91			(24)
4. Replace switches	92			(25)
5. Replace thermostat	93			(26)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				
L. SERVICING TRASH COMPACTORS				
1. Replace motor	94			(27)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

JOB INVENTORY (DUTY-TASK LIST)		Page 10 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

M. SERVICING GAS DRYERS		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Adjust regulator valve	95			(2:28)
2. Replace door switch	96			(29)
3. Replace drum	97			(30)
4. Replace fan	98			(31)
5. Replace main burner	99			(32)
6. Replace motor	100			(33)
7. Replace orifices	101			(34)
8. Replace port plate	102			(35)
9. Replace shaft bearing	103			(36)
10. Replace solenoid valve	104			(37)
11. Replace temperature control thermostat	105			(38)
12. Replace timer	106			(39)
13. Test piping system	107			(40)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

JOB INVENTORY (DUTY-TASK LIST)		Page 11 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
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3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

N. SERVICING GAS RANGES		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
1. Adjust burners and pilot lights	108			(2:41)
2. Install valves	109			(42)
3. Replace burners	110			(43)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				
O. SERVICING DOMESTIC REFRIGERATORS				
1. Add oil to hermetic unit	111			(44)
2. Add refrigerant to hermetic unit	112			(45)
3. Analyze system with gauges	113			(46)
4. Charge system	114			(47)
5. Clean coil and drain dehumidifier	115			(48)
6. Clean condenser	116			(49)
7. Evacuate system	117			(50)

JOB INVENTORY (DUTY-TASK LIST)		Page 12 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
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3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

0. SERVICING DOMESTIC REFRIGERATORS (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
8. Install and remove gauge set	118			(2:51)
9. Install door gaskets and hardware	119			(52)
10. Install refrigerator	120			(53)
11. Install service valve on hermetic unit	121			(54)
12. Install thermostat	122			(55)
13. Install water cooler	123			(56)
14. Install wiring on freezer	124			(57)
15. Locate trouble in dehumidifier	125			(58)
16. Maintain service valves	126			(59)
17. Make gaskets	127			(60)
18. Measure temperature	128			(61)
19. Rebuild a reciprocating compressor	129			(62)
20. Replace belts	130			(63)
21. Replace capacitor	131			(64)
22. Replace current relay	132			(65)
23. Replace drier filter	133			(66)
24. Replace evaporator	134			(67)
25. Replace expansion valve	135			(68)

JOB INVENTORY (DUTY-TASK LIST)		Page 13 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

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6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

0. SERVICING DOMESTIC REFRIGERATORS (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
26. Replace fan motor	136			(2:69)
27. Replace freezer thermostat	137			(70)
28. Replace hermetic system	138			(71)
29. Replace motor overload	139			(72)
30. Replace relay and overload	140			(73)
31. Replace wiring harness	141			(74)
32. Service open type compressors	142			(75)
33. Service rotary compressor	143			(76)
34. Set controls on dehumidifier	144			(77)
35. Silver solder leak in evaporator	145			(78)
36. Test cabinet heaters	146			(79)
37. Test compressor motor	147			(80)
38. Test defrost cycle	148			(3:1)
39. Test electric defrost	149			(2)
40. Test electrical circuits	150			(3)
41. Test for leaks	151			(4)
42. Test freezer performance	152			(5)
43. Test hot-gas defrost	153			(6)

JOB INVENTORY (DUTY-TASK LIST)		Page 14 of 16 Pages

1. Check tasks you perform now (√).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (√) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

O. SERVICING DOMESTIC REFRIGERATORS		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
44. Test hot-wire relay	154			(3:7)
45. Test open-type motors	155			(8)
46. Test potential relay	156			(9)
47. Test temperature control	157			(10)
48. Trouble-shoot hermetic system	158			(11)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				
P. SERVICING DOMESTIC AIR CONDITIONING (WINDOW UNITS)				
1. Calculate comfort cooling heat load	159			(12)
2. Calibrate thermostat	160			(13)
3. Clean room air-conditioner	161			(14)
4. Install self-contained air conditioner	162			(15)
5. Install window type unit	163			(16)

JOB INVENTORY (DUTY-TASK LIST)		Page 15 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

P. SERVICING DOMESTIC AIR CONDITIONING (WINDOW UNITS) (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
6. Make operational check of air conditioner	164			(3:17)
7. Record duct system	165			(18)
8. Repair leaks in silver soldered connections	166			(19)
9. Replace compressor	167			(20)
10. Replace condenser	168			(21)
11. Replace evaporator	169			(22)
12. Replace expansion valve	170			(23)
13. Replace fan	171			(24)
14. Replace fan cool switch	172			(25)
15. Replace fan motor	173			(26)
16. Replace relays	174			(27)
17. Replace running capacitors	175			(28)
18. Service room air conditioner	176			(29)
19. Test capacitor-start, capacitor-run motor	177			(30)
20. Test condenser fan motor	178			(31)
21. Test evaporator fan motor	179			(32)
22. Test permanent split-capacitor motor	180			(33)
23. Test running capacitors	181			(34)

JOB INVENTORY (DUTY-TASK LIST)		Page 16 of 16 Pages

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) task on time spent in your present job.

TIME SPENT SCALE

1 - VERY MUCH BELOW AVERAGE
2 - BELOW AVERAGE
3 - SLIGHTLY BELOW AVERAGE
4 - ABOUT AVERAGE
5 - SLIGHTLY ABOVE AVERAGE
6 - ABOVE AVERAGE
7 - VERY MUCH ABOVE AVERAGE

P. SERVICING DOMESTIC AIR CONDITIONING (WINDOW UNITS) (CONTINUED)		CHECK IF DONE IN PRESENT JOB	TIME SPENT DOING THESE TASKS IN PRESENT JOB	OFFICE USE ONLY
24. Trouble-shoot a self-container unit	182			(3:35)
25. Trouble-shoot a window unit	183			(36)
Note: If any tasks you perform under this duty are not listed, write them in the blank spaces below.				

DO THIS STEP NOW

WHEN YOU HAVE COMPLETED ALL YOUR RATINGS, YOU WILL HAVE COMPLETED THE OCCUPATIONAL INVENTORY. YOU SHOULD THEN PLACE IT IN THE SELF-ADDRESSED STAMPED ENVELOPE AND MAIL IT BACK TO US. Thank you!

Appendix C

OFFICE MACHINE REPAIR OCCUPATIONAL INVENTORY

BACKGROUND INFORMATION

For Office Use Only

Project Code: 2145 (01-04)

Booklet Number: (05-08)

O.E. Code: 17.0600 (09-14)

D.O.T. Code: (15-23)

Check The One Job Title Which Most Accurately Describes Your Job

_____	Office Machine Serviceman	(633.281-030)
_____	Office Machine Serviceman Foreman	(633.131-030)
_____	Office Machine Serviceman Apprentice	(633.281-034)
_____		
_____		

PLEASE PRINT ALL REQUESTED INFORMATION

Name _____ (24-55)

Address
Street _____ (56-65)

City _____ (66-73)

State _____ (74-75)

Zip Code _____ (76-80)

Sex _____ M _____ F (01)

Total Time on Job _____ Yrs. _____ Months (02-04)

Total Time in Career Field _____ Yrs. _____ Months (05-07)

Present Position or Job Title (08-29)

Number People Supervised _____ (30-31)

Name of Employer _____ (32-55)

Address _____ (56-75)

_____

Circle Years of Education Completed

Elementary	High School	College	Graduate	
1 2 3 4 5 6 7 8	9 10 11 12	13 14 15 16	17 18	(76-77)

BACKGROUND INFORMATION (Cont.)
Check the Tools and Equipment You Use in Your Current Assignment

	CHECK		
1.	_____	Aligner, side	(1:14)
2.	_____	Allen driver kit	(15)
3.	_____	Atomizer	(16)
4.	_____	Bench grinder	(17)
5.	_____	Bender, actuating arm 9" overall	(18)
6.	_____	Bender, key lever	(19)
7.	_____	Bender, ribbon vibrator, 5 3/4" overall	(20)
8.	_____	Block, combination bench	(21)
9.	_____	Brush, cleaning 1 3/4" bristles, 1 1/4" dia., 10½ overall	(22)
10.	_____	Brush, cleaning, 1 3/4" bristles, 3/4" wide, 16" overall	(23)
11.	_____	Brush, enamel, 3/4" bristles, 3/4" wide, 6 3/4" overall	(24)
12.	_____	Brush, scrubbing, 1" bristles, 1" dia. 5" long, 10½" overall	(25)
13.	_____	Brush, wire handles, 3 3/4" bristles, 1 1/2" dia., 12" overall	(26)
14.	_____	Brush, 3/8" bristles, 1 3/4" dia, 6" overall	(27)
15.	_____	Brush. 9/16" bristles, 3/4" dia., 6" overall	(28)
16.	_____	Calculator, inch to metric	(29)
17.	_____	Calipers, outside, spring nut 8" overall	(30)
18.	_____	Chair, adjustable posture	(31)
19.	_____	Chair, side arm	(32)
20.	_____	Chalk board	(33)
21.	_____	Circuit board holder	(34)
22.	_____	Cleaning tank	(35)
23.	_____	Clock, electric	(36)

BACKGROUND INFORMATION (Cont.)
Check the Tools and Equipment You Use in Your Current Assignment

24.	_____	Cold chisel, ½", 1/4" 6 3/4" overall	(37)
25.	_____	Cutters, parallel jaw 6½"	(38)
26.	_____	Desk, linoleum top	(39)
27.	_____	Divider, probes	(40)
28.	_____	Drill press, bench model	(41)
29.	_____	Drill set, Morse straight shank	(42)
30.	_____	Emery stone, coarse and fine grit, 6" x 2" x 1"	(43)
31.	_____	Extractors, dia. small end 1/4", large end 7/16"	(44)
32.	_____	Extractors, screw, gage #4, dia. small end 3/16"	(45)
33.	_____	Figures, steel for metal stamping	(46)
34.	_____	File, 6" x 1/4", o - cut	(47)
35.	_____	File, pillar, 6" x 1/2", 0 - cut	(48)
36.	_____	File, round, 6" 0 - cut	(49)
37.	_____	File, segment, 4", 0 - cut, 20 gage	(50)
38.	_____	File, 4 drawer letter size	(51)
39.	_____	Gage, feeler, 9 leaves, .003, .004, .005, .006, .008, .010, .012, .015, .018	(52)
40.	_____	Gage, pickup, trip	(53)
41.	_____	Gage, soldering	(54)
42.	_____	Gage, type soldering	(55)
43.	_____	Goggles, clear, shatter proof lens, adjustable replaceable lens	(56)
44.	_____	Gun, connection thread 1/4", NBS, (M), air consumption	(57)
45.	_____	Gun, spray	(58)
46.	_____	Gun, suction spray	(59)

47. _____ Hacksaw, 8" to 12", 3 1/4" stock, 3/16" x 3/16" depth (60)

48. _____ Hammer, ball peen, size #0000, 4 oz. 11½ overall (61)

49. _____ Hammer, claw 16 oz., 13" overall (62)

50. _____ Hammer, mechanics 4 oz. (63)

51. _____ Heater, gas water, 30 gal. capacity (64)

52. _____ Heat sink (65)

53. _____ Hex key set (66)

54. _____ Hose, air 25" length (67)

55. _____ Hose, rubber covered air, 12" length with 1/4" NBS 1/4 (68)

56. _____ Icepick, scribe (69)

57. _____ Iron, Press-to-heat (70)

58. _____ Kit, transfer (71)

59. _____ Knife, electricians (72)

60. _____ Lathe, ½ hp motor, 115-230 V - 60 cyc. AC 1725 rpm (73)

61. _____ Light, bench with shade (74)

62. _____ Magnetizer - demagnetizer, 110 V, AC-DC complete (75)

63. _____ Nozzle, straight extension, 6" air consumption 14 CFW at 80 pounds (76)

64. _____ Oil can, bench 4 oz. (77)

65. _____ Oiler, capacity 1 pt, 6" spout w/twin tip vent (78)

66. _____ Oscilloscope (79)

67. _____ Paint oven, infra red (80)

68. _____ Picks, segmented, for cleaning slots in segment (2:14)

69. _____ Pliers, diagonal cutting, 5 1/8" overall (15)

70. _____ Pliers, duck bill, 8" overall (16)

71. _____ Pliers, key lever peening (17)

72. _____ Pliers, keyring attaching with plate (18)

73. _____ Pliers, keyring detaching w/shift plate (19)

74. _____ Pliers, longnose crescent, 2 1/4" nose length, 6" overall (20)

75. _____ Pliers, 7" nineprong (21)

76. _____ Pliers, 3 prong 6 13/16" overall length (22)

77. _____ Pliers, side aligning, 7 1/8" overall length (23)

78. _____ Pliers, slip joint, 6" overall (24)

79. _____ Pliers, standard, 665 #57 Smith Corona for Model 1A, side aligning (25)

80. _____ Pliers, wirecutting - mauler jaws, 7 7/8" overall (26)

81. _____ Pliers, wiring, duck billed jaws, 7 7/8" overall (27)

82. _____ Poly bottles (28)

83. _____ Punch, 5/8" x 3/16", 16" overall (29)

84. _____ Punch, centering, 1/4", 4" overall (30)

85. _____ Punch, pin driving 1/4", 1/16", 4" overall (31)

86. _____ Punch, starting ½", 1/4", 6" overall (32)

87. _____ Roller transfer (33)

88. _____ Rule, tape, 6 ft. (34)

89. _____ Screwdriver, bristol, blade 4½", shank 1/16" (35)

90. _____ Screwdriver 1/8" x 1/8" blade 5/32" bit (36)

91. _____ Screwdriver, 7/32" x 6½" blade, 7/32 bit (37)

92. _____ Screwdriver, 8" blade, 1/8" stock, 5/32" bit (38)

93. _____ Screwdriver, shank 5/16" blade 6" (39)

94. _____ Screwdriver, shank 7/32", blade 6 1/2" (40)

95. _____ Screwdriver, shank, 5/32", blade 8" (41)

96. _____ Screwdriver, 1/8" shank, 4½" blade (42)

97. _____ Screwdriver, 3/15" shank, 6" blade (43)

98. _____ Screwdriver, 3/16" bit, 6½" blade (44)

99. _____ Screwdriver, combination, 1/4" x 3/8", 9 3/4" overall (45)

100. _____ Screwdriver, double end offset, 5/32" bit (46)

101. _____ Screwdriver, hexagon, blade 5½", shank 1/16" (47)

102. _____ Screwdriver, jeweler's blades, .025, .040, .055, .070, .080, .100 (48)

103. _____ Screwdriver, Phillips # 1, 2½"bit length (49)

104. _____ Screwdriver, Phillips #2, 3½" bit length (50)

105. _____ Screwdriver, Phillips #3, 5½" bit length (51)

106. _____ Screwdriver, Phillips #4, 5½" bit length (52)

107. _____ Screwdriver, shank 1/4", blade 10" (53)

108. _____ Screw plate (54)

109. _____ Snips, 12 1/4" overall (55)

110. _____ Solder puller (56)

111. _____ Solder station (57)

112. _____ Solder, 1/16" diam., ½ pound (58)

113. _____ Soldering flux, paste 2 oz. (59)

114. _____ Spray booth (60)

115. _____ Square, combination, graduated inches, 8ths, 10ths, 32ths, 12" overall (61)

116. _____ Steel work benches (62)

117.	_____	Storage cabinet	(63)
118.	_____	Straight edge, graduated steel, non beveled, 3/16" x 18"	(64)
119.	_____	Tank, Bernz-o-Matic	(65)
120.	_____	Testmeter	(66)
121.	_____	Tip, torch	(67)
122.	_____	Tool, roll, 12½"x 22"	(68)
123.	_____	Transformers, air	(69)
124.	_____	Turntable, ball bearing w/locking top	(70)
125.	_____	Tweezers, 4 1/4" overall	(71)
126.	_____	Twister, paper pan	(72)
127.	_____	Vise, swivel type, 2 jaws	(73)
128.	_____	Wheel, loose muslin buffs, 6" diam. ½" hole	(74)'
129.	_____	Wheel, wire, 33 gage, 6" diam., 1" face w/adapter, ½"hole	(75)
130.	_____	Workbench, 24" x 30" with typewriter storage	(76)
131.	_____	Work tables, individual	(77)
132.	_____	Wrench, adjustable, 3/4" capacity, head thickness 13/32" 5 oz.	(78)
133.	_____	Wrench, aligning 3/64" slot V slot, 1/16" to 5/32"	(79)
134.	_____	Wrench, combination screwdriver 1/8" x 1/4" bits, 6 3/8" overall	(80)
135.	_____	Wrench, escapement, 1/4", 9/32", openings 3 7/8" overall	(3:14)
136.	_____	Wrench, escapement, 1/8" opening, 4 1/8" overall	(15)
137.	_____	Wrench, open end, noiseless, 5/32" x 3/16"	(16)
138.	_____	Wrench, open end, two 13/16" openings, 4 1/4" overall	(17)
139.	_____	Wrench, open end, 3/16" x 5/15" openings	(18)
140.	_____	Wrench, open end two 7/16" openings, 5 3/16" overall	(19)

141. _____ Wrench, open end, two 3/8" openings, 3½" overall (20)

142. _____ Wrench, 3/16", 1/4" openings, 5 11/16" overall (21)

143. _____ Wrench, open end, 1/4", 3/8" openings, 3 3/4" overall (22)

144. _____ Wrench, open end, 9/64" 3/16" openings, 3 5/8" overall (23)

145. _____ Wrench, open end, 9/64", 7?32" openings, 3 5/8" overall (24)

146. _____ Wrench, open end, two 1/4" openings, 3 7/8" overall (25)

147. _____ Wrench, open end, two 5/16" openings 3 7/8" overall (26)

148. _____ Wrench, socket, 7/32" hex opening, 3 5/16" overall (27)

149. _____ Wrench, socket, 1/4" hex, 6½" overall (28)

150. _____ Wrench, socket, 7/32" hex (29)

151. _____ Wrench, socket 7/32" hex opening, 3 5/8" overall (30)

152. _____ Wrench, socket, noiseless, 5/16" hex opening (31)

153. _____ Wrench, toggle, 3/16" hex, 1/4" slot, 6 7/8" overall (32)

154. _____ Wrench, toggle, 1/4" hex slot, 6 7/8" overall (33)

155. _____ Wrench, toggle, 3/8" hex, 1/4" slot opening, 5 7/8" overall (34)

156. _____ Wrench, toggle, 7/32"hex, 1/4" slot opening, 5 7/8" overall (35)

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STOP! READ THIS PAGE BEFORE GOING FURTHER

Have you completed the *Background Information* section? Make sure before you continue with this procedure.

Procedure A – Checking Tasks of Present Job

1. As you read each task in the Duty-Task section, pages 1 through 12 place a check (✓) beside each task that you perform in your present job. Put your checkmark in the column headed "Check if Done in Present Job."

2. DO NOT COMPLETE THE RIGHT–HAND COLUMN AT THIS TIME.

3. If a task that you perform is not listed anywhere in the duty area, write it in the blank space at the end of the duty.

4. Do not confuse work you do yourself with work you supervise.

5. Remember, at this time you are to complete ONLY the column headed "Check if Done in Present Job" for pages 1 through 12 . Now, turn to page 1 and BEGIN.

Procedure B – Rating Time Spent on Tasks on Present Job

1. Now you are to rate the relative amount of time you spend performing each task in each duty area. Relative time spent means the total time you spend doing the task compared with the time you spend on each of the other tasks in the duty area.

2. Use a rating of "1" if you spend "very much below average" amount of time on a task. Use a rating of "2" for "below average" time; and so on, up to a rating of "7" if you spend "very much above average" amount of time on the task.

3. In each duty, select the task which you spend the most time doing and give it the highest rating on the 7-point scale.

4. Now rate the remaining tasks you have checked in relation to the highest-rated task and proceed to the next duty.

5. Place your rating, according to the 7-point scale, in the right-hand column, headed "Time Spent Doing These Tasks on Present Job."

6. When you have completed all your ratings in the right-hand column of pages 1 through 12 you will have completed the Occupational Inventory.

7. Now turn to page 1 and BEGIN your rating for the right-hand column.

SU

JOB INVENTORY (duty-task list)

Page 1 of 12 Pages

DOT(S)	633.281-030	633.131-030	633.281-034
DOT(S)			

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

		Check if done in present job	Time spent doing these tasks in present job	
A.	SUPERVISING AND PLANNING			
1.	Demonstrate office machine repair tasks to personnel	1*		(14)
2.	Evaluate shop production	2.		(15)
3.	Evaluate worker performance	3.		(16)
4.	Inspect shop for OSHA safety violations	4.		(17)
5.	Inventory supplies and parts	5.		(18)
6.	Inventory tools and equipment	6.		(19)
7,	Organize shop layout	7.		(20)
8.	Orient workers on shop practices	8.		(21)
9.	Prepare shop budget	9.		(22)
10.	Prepare shop maintenance procedures	10.		(23)
11.	Prepare work schedules and assignments	11.		(24)
12.	Process repair work	12.		(25)
13.	Receive maintenance contract machines	13.		(26)
14.	Receive new office machines	14.		(27)
15.	Requisition supplies and parts	15.		(28)
16.	Requisition tools and equipment	16.		(29)
17.	Write shop personnel requirements	17.		(30)
18.	Write shop repair equipment requirements	18.		(31)
NOTE: If any task you perform under this duty is not listed, write it on the back of this page.				

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	633.281-030	633.131-030	633.281-034
DOT(S)			

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

B. SELLING OFFICE MACHINES AND SERVICES		Check if done in present job	Time spent doing these tasks in present job	
1. Calculate price to charge	19.			(32)
2. Calculate repair costs	20.			(33)
3. Complete a sales slip	21.			(34)
4. Demonstrate office machine operation	22.			(35)
5. Prepare printed advertising layout	23.			(36)
6. Prepare verbal (radio-TV) advertising	24.			(37)
7. Prepare visual (posters, store display) advertising layout	25.			(38)
8. Receive office machine for repair	26.			(39)
9. Sell new office machines	27.			(40)
10. Sell parts	28.			(41)
11. Update parts catalogs	29.			(42)
12. Update service manuals	30.			(43)
NOTE: If any task you perform under this duty is not listed, write it in the space below.				

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	633.281-030	633.131-030	633.281-034
DOT(S)			

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

		Check if done in present job	Time spent doing these tasks in present job	
C. MAINTAINING AND REPAIRING TYPEWRITERS				
1. Adjust aligning scales	31.			(44)
2. Adjust back space pawl	32.			(45)
3. Adjust bichrome mechanism	33.			(46)
4. Adjust carriage clamps	34.			(47)
5. Adjust carriage cord tension	35.			(48)
6. Adjust carriage return mechanism	36.			(49)
7. Adjust carrier return cord	37.			(50)
8. Adjust carrier return cord tension	38.			(51)
9. Adjust drive mechanism	39.			(52)
10. Adjust escapement rack teeth	40.			(53)
11. Adjust escapement starwheel	41.			(54)
12. Adjust for negative rotation	42.			(55)
13. Adjust for positive rotation	43.			(56)
14. Adjust for proper tilt	44.			(57)
15. Adjust front feed rolls	45.			(58)
16. Adjust index mechanism	46.			(59)
17. Adjust keyboard selection mechanism	47.			(60)
18. Adjust key levers	48.			(61)
19. Adjust line lock	49.			(62)
20. Adjust line space mechanism	50.			(63)
21. Adjust mainspring	51.			(64)
22. Adjust margin release	52.			(65)
23. Adjust motor belts	53.			(66)

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	633.281-030	633.131-030	633.281-034
DOT(S)			

1. Check tasks you perform now (✔).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✔) tasks on time spent in your present job.

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

		Check if done in present job	Time spent doing these tasks in present job	
C. MAINTAINING AND REPAIRING TYPEWRITERS (CON'T)				
24. Adjust motor pulleys	54.			(67)
25. Adjust operational control mechanism	55.			(68)
26. Adjust print (impression) mechanism	56.			(69)
27. Adjust rear feed rolls	57.			(70)
28. Adjust ribbon feed mechanism	58.			(71)
29. Adjust ribbon reverse control	59.			(72)
30. Adjust rocker assembly	60.			(73)
31. Adjust rotate arm	61.			(74)
32. Adjust rotation spring tension	62.			(75)
33. Adjust segment lock arm	63.			(76)
34. Adjust shift lock key	64.			(77)
35. Adjust shift mechanism	65.			(78)
36. Adjust space bar mechanism	66.			(79)
37. Adjust tabulator clear roll	67.			(80)
38. Adjust tabulator components	68.			(2:1)
39. Adjust universal bar	69.			(2)
40. Align carriage rail	70.			(3)
41. Align margin bails	71.			(4)
42. Align rotate latches	72.			(5)
43. Align type heads (bars)	73.			(6)
44. Chemically clean the typewriter	74.			(7)
45. Clean typewriter in customer's office	75.			(8)
46. Form back space mechanism	76.			(9)

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	633.281-030	633.131-030	633.281-034
DOT(S)			

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

C. MAINTAINING AND REPAIRING TYPEWRITERS (CON'T)		Check if done in present job	Time spent doing these tasks in present job	
47. Form bent cover plates	77.			(10)
48. Form bent margin parts	78.			(11)
49. Form bent print (impression) mechanism parts	79.			(12)
50. Form bent ribbon feed parts	80.			(13)
51. Form bent space bar mechanism	81.			(14)
52. Form bent typewriter frame	82.			(15)
53. Form line lock parts	83.			(16)
54. Form tabulator clear roll	84.			(17)
55. Form tabulator set key components	85.			(18)
56. Inspect typewriter for periodical maintenance	86.			(19)
57. Install new or reconditioned typewriters	87.			(20)
58. Lubricate the typewriter	88.			(21)
59. Paint and refinish typewriter	89.			(22)
60. Perform fine alignment adjustments	90.			(23)
61. Perform locator adjustments	91.			(24)
62. Perform "motion" adjustments	92.			(25)
63. Perform "on-feet" adjustments	93.			(26)
64. Perform "over and under" banking adjustments	94.			(27)
65. Prepare new typewriter for sale	95.			(28)
66. Replace bichrome mechanism	96.			(29)
67. Replace broken star wheel	97.			(30)
68. Replace carriage bearings and pinions	98.			(31)
69. Replace carriage cord	99.			(32)

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	633.281-030	633.131-030	633.281-034
DOT(S)			

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

		Check if done in present job	Time spent doing these tasks in present job	
C. MAINTAINING AND REPAIRING TYPEWRITERS (CON'T)				
70. Replace carriage drawband	100.			(33)
71. Replace carriage mainspring	101.			(34)
72. Replace carriage rail	102.			(35)
73. Replace carriage release	103.			(36)
74. Replace carrier return cord	104.			(37)
75. Replace feed rolls	105.			(38)
76. Replace line lock parts	106.			(39)
77. Replace margin bails	107.			(40)
78. Replace motor	108.			(41)
79. Replace motor condensor	109			(42)
80. Replace motor switch	110.			(43)
81. Replace rotate tapes	111.			(44)
82. Replace shift lock latch	112.			(45)
83. Replace shift mechanism ball-bearings	113.			(46)
84. Replace shift mechanism linkage	114.			(47)
85. Replace shift mechanism spring	115.			(48)
86. Replace tilt tape	116.			(49)
87. Replace type bar links	117.			(50)
88. Replace worn back space pawl bracket	118.			(51)
89. Rethread damaged parts	119.			(52)
90. Solder type heads (bars)	120.			(53)
91. Straighten carriage release	121			(54)
92. Tighten left margin center post	122			(55)

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	633.281-030	633.181-030	633.281-034
DOT(S)			

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

	Check if done in present job	Time spent doing these tasks in present job
NOTE: If any task you perform under this duty is not		
listed, write it in the space below.		

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	633.281-030	633.131-030	633.281-034
DOT(S)			

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

		Check if done in present job	Time spent doing these tasks in present job	
D. MAINTAINING AND REPAIRING CALCULATORS				
1. Adjust add-subtract gate centralizers	123.			(56)
2. Adjust back carriage support rail	124.			(57)
3. Adjust bottom carriage support rail	125.			(58)
4. Adjust calculator clear assemblies	126.			(59)
5. Adjust division direction control slides	127.			(60)
6. Adjust carriage mechanism	128.			(61)
7. Adjust counter blocking slides	129.			(62)
8. Adjust counter reverse lever assemblies	130.			(63)
9. Adjust cycle lock pins	131.			(64)
10. Adjust division settings levers	132.			(65)
11. Adjust lock bar operating assemblies	133.			(66)
12. Adjust main clutch assemblies	134.			(67)
13. Adjust motor units	135.			(68)
14. Adjust multiplier units	136.			(69)
15. Adjust negative multiplier key assemblies	137.			(70)
16. Adjust numeral keyboard	138.			(71)
17. Adjust selection cams	139.			(72)
18. Adjust selection mechanisms	140.			(73)
19. Adjust shift control lever assemblies	141.			(74)
20. Adjust shift drive idler assemblies	142.			(75)
21. Adjust wedge shaft assemblies	143.			(76)
22. Align carriage clamps	144.			(77)
23. Align main clutch assemblies	145.			(78)

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	633,281-030	633,131-030	633,281-034
DOT(S)			

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

		Check if done in present job	Time spent doing these tasks in present job	
D. MAINTAINING AND REPAIRING CALCULATORS (CON'T)				
24. Clean the calculator	146			(79)
25. Form bent counter mechanism parts	147			(80)
26. Form counter blocking slides	148			(3:1)
27. Form counter reverse lever assemblies	149			(2)
28. Form defective calculator clear assemblies	150			(3)
29. Form defective carriage	151			(4)
30. Form gear train components	152			(5)
31. Form numeral keyboard parts	153			(6)
32. Form selection arms or cams	154			(7)
33. Form selection mechanism parts	155			(8)
34. Lubricate the calculator	156			(9)
35. Overhaul the motor	157			(10)
36. Perform carriage to base adjustments	158			(11)
37. Remove carriage and components	159			(12)
38. Replace calculator clear assemblies	160			(13)
39. Replace calculator lift cams	161			(14)
40. Replace carriage and components	162			(15)
41. Replace counter blocking slides	163			(16)
42. Replace counter mechanisms	164			(17)
43. Replace counter reverse lever assemblies	165			(18)
44. Replace cycle lock pins	166			(19)
45. Replace gear train components	167			(20)
46. Replace lock bar operating assemblies	168			(21)

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	633.281-030	633.131-030	633.281-034
DOT(S)			

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

D. MAINTAINING AND REPAIRING CALCULATORS (CON'T)		Check if done in present job	Time spent doing these tasks in present job	
47. Replace main clutch assemblies	169.			(22)
48. Replace motor belts	170.			(23)
49. Replace motor condensor	171.			(24)
50. Replace motor pulleys	172.			(25)
51. Replace motor starting switch and components	173.			(26)
52. Replace motor units	174.			(27)
53. Replace multiplier units	175.			(28)
54. Replace negative multiply key assemblies	176.			(29)
55. Replace numeral keyboard components	177.			(30)
56. Replace reverse lock mechanisms	178.			(31)
57. Replace right setting line assemblies	179.			(32)
58. Replace selection arms or cams	180.			(33)
59. Replace selection mechanisms	181.			(34)
60. Replace selection segments	182.			(35)
61. Replace shift clutch driver gear assemblies	183.			(36)
62. Replace shift control lever assemblies	184.			(37)
63. Replace shift drive idler assemblies	185.			(38)
64. Rethread damaged parts	186.			(39)
65. Time counter mechanisms	187.			(40)
66. Time gear trains	188.			(41)
67. Time right setting line assemblies	189.			(42)

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	633.281-030	633,131-030	633.281-034
DOT(S)			

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

D. MAINTAINING AND REPAIRING CALCULATORS (CON'T)	Check if done in present job	Time spent doing these tasks in present job
NOTE: If any task you perform under this duty is not		
listed, write it in the space below.		

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	633.281-030	633.131-030	633.281-034
DOT(S)			

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

		Check if done in present job	Time spent doing these tasks in present job	
E. MAINTAINING AND REPAIRING DUPLICATOR				
1. Adjust cylinder	190.			(43)
2. Adjust motor drive assembly	191.			(44)
3. Adjust paper feed mechanism	192.			(45)
4. Adjust print control mechanism	193.			(46)
5. Align the cylinder	194.			(47)
6. Clean the cylinder	195.			(48)
7. Clean the duplicator	196.			(49)
8. Install duplicators	197.			(50)
9. Lubricate duplicator	198.			(51)
10. Perform operational checks	199.			(52)
11. Replace broken paper feed parts	200.			(53)
12. Replace clutch pulleys	201.			(54)
13. Replace motor assembly	202.			(55)
14. Replace reeves pulley	203.			(56)

NOTE: If any task you perform under this duty is not listed, write it on the back of this page.

→ Go back to page ix and follow Procedure B

→ When you have completed all ratings in the column, you will have completed the job inventory. Please return the booklet in the enclosed envelop. Thank you.

*Cumulative Task Numbers

Appendix D

SMALL ENGINE OCCUPATIONAL INVENTORY

BACKGROUND INFORMATION

For Office Use Only

Project Code: 2133 (01-04) 01

Booklet Number: (05-08)

O.E. Code: 17.3100 (09-14)

D.O.T. Code: (15-23)

PLEASE PRINT ALL REQUESTED INFORMATION

Name _____ (24-55)

Address _____ (56-75)

_____

_____

Sex _____ M _____ F (01) 02

Total Time on Job _____ Yrs. _____ Months (02-04)

Total Time in Career Field _____ Yrs. _____ Months (05-07)

Present Position or Job Title _____ (08-29)

Number People Supervised _____ (30-31)

Name of Employer _____ (32-55)

Address _____ (56-75)

_____

_____

Circle Years of Education Completed

Elementary	High School	College	Graduate	
1 2 3 4 5 6 7 8	9 10 11 12	13 14 15 16	17 18	(76-77)

1. ___ Air Compressor (14)
2. ___ Battery, bulb filler (15)
3. ___ Battery, cell tester (16)
4. ___ Battery, charger (17)
5. ___ Battery, hydrometer (18)
6. ___ Battery, jumper cables (19)
7. ___ Battery, terminal cleaners (20)
8. ___ Battery, terminal lifters (21)
9. ___ Bearing puller (22)
10. ___ Boring bar (23)
11. ___ Breaker plunger gauges (24)
12. ___ Brush, wire (25)
13. ___ Calipers (26)
14. ___ Chain breaker (27)
15. ___ Chain grinder kit (28)
16. ___ Chisel, cold (29)
17. ___ Coil and condenser tester (30)
18. ___ Compression gauges (31)
19. ___ Counterbore cutters (32)
20. ___ Crankcase support jack (33)
21. ___ Crankcase run out gauge (34)
22. ___ Crankshaft straightner (35)
23. ___ Cutter bolt (36)
24. ___ Cylinder dial gauge (37)
25. ___ Cylinder hone (midget) (38)

26. _____ Depth gauge tool (39)

27. _____ Dial indicator set (40)

28. _____ Diamond grinding wheel (41)

29. _____ Drill, portable (42)

30. _____ Driver set for a given engine (43)

31. _____ Feeler gauges (44)

32. _____ Files (assorted) (45)

33. _____ File guide (46)

34. _____ Flashlight with gooseneck adapter (47)

35. _____ Fly-wheel holder (48)

36. _____ Fly-wheel puller (49)

37. _____ Gasket scraper (50)

38. _____ Glaze breaker (51)

39. _____ Grease gun (52)

40. _____ Grinder with wire brush (53)

41. _____ Growler (54)

42. _____ Hammer, ball peen (55)

43. _____ Hacksaw (56)

44. _____ Helicoil kit (57)

45. _____ Hole gauge (58)

46. _____ Impact tool set (59)

47. _____ Manufacturer's special tool kit for chainsaw engine (60)

48. _____ Manufacturer's special tool kit for outboard engine (61)

49. _____ Metric hex keys (62)

50. _____ Metric thread file (63)

51.___Micrometers, assorted (64)

52.___Motor jack (65)

53.___Nut cracker (66)

54.___Outboard motor test tank (67)

55.___Parts washer (68)

56.___Pilot set for a given engine (69)

57.___Piston ring compressor (70)

58.___Piston ring expander (71)

59.___Pitchblock and surface plate bench (72)

60.___Pliers (assorted) (73)

61.___Pliers, vise grip (74)

62.___Plug gauges for a given engine (75)

63.___Press, arbor (76)

64.___Pressure testing tool (77)

65.___Propane torch (78)

66.___Punches (assorted) (79)

67.___Reamer set for given engine (80)

68.___Retaining ring pliers - convertible type (2:1)

69.___Retaining ring pliers - external (2)

70.___Ridge reamer (3)

71.___Ring groove cleaner (4)

72.___Rivet installing tool (5)

73.___Rolling tool (6)

74.___Rule, steel (7)

75.___Screwdrivers, carburetor jet (8)

76. ___ Screwdrivers (standard assorted) (9)
77. ___ Screwdrivers (Phillips assorted) (10)
78. ___ Screw extractor set (11)
79. ___ Sink, chemical cleaning (12)
80. ___ Soldering iron (13)
81. ___ Sprocket tool (14)
82. ___ Starter rewind crank (15)
83. ___ Surface plate (16)
84. ___ Tachometer (vibrator type) (17)
85. ___ Tap and die set (18)
86. ___ Telescoping gauge (19)
87. ___ Test wheels (20)
88. ___ Thread file (21)
89. ___ Tin snips (22)
90. ___ Trouble light (23)
91. ___ Tubing tools (24)
92. ___ Tweezers (25)
93. ___ Undercutter (26)
94. ___ Valve lapping compound (27)
95. ___ Valve seat repair set for a given engine (28)
96. ___ Valve spring compressor (29)
97. ___ Vise, machinist's (30)
98. ___ Welder, electric (31)
99. ___ Welder heliarc (32)
100. ___ Welder, oxyacetylene (33)

101.___Wet valve grinding machine for small engines (34)

102.___Wrenches, adjustable (35)

103.___Wrenches, allen (36)

104.___Wrenches, box end (assorted) (37)

105.___Wrenches, open end (assorted) (38)

106.___Wrenches, air impact (39)

107.___Wrenches, ignition (40)

108.___Wrenches, socket 1/4" drive (41)

109.___Wrenches, socket 3/8" drive (42)

110.___Wrenches, socket 1/2" drive (43)

111.___Wrench spanner (44)

112.___Wrench, spark plug (45)

113.___Wrench, torque (foot/lbs.) (46)

114.___Wrench, torque (inch/lbs.) (47)

NOTE: If you use tools or equipment which are not listed, please list below.

115.___ (48)

116.___ (49)

117.___ (50)

118.___ (51)

119.___ (52)

120.___ (53)

121.___ (54)

122.___ (55)

123.___ (56)

124.___ (57)

STOP! READ THIS PAGE BEFORE GOING FURTHER

Have you completed the *Background Information* section? Make sure before you continue with this procedure.

Procedure A – Checking Tasks of Present Job

1. As you read each task in the *Duty-Task* section, pages 1 through 23, place a check (✓) beside each task that you perform in your present job. Put your checkmark in the column headed "Check if Done in Present Job."

2. DO NOT COMPLETE THE RIGHT–HAND COLUMN AT THIS TIME.

3. If a task that you perform is not listed anywhere in the entire list, write it in the blank space at the end of each series of tasks.

4. Do not confuse work you do yourself with work you supervise.

5. Remember, at this time you are to complete ONLY the column headed "Check if Done in Present Job" for pages 1 through 23. Now, turn to page 1 and BEGIN.

Procedure B – Rating Time Spent on Tasks on Present Job

1. Have you checked each task that you perform in your present job? Make sure before you continue with this procedure.

2. Now you are to rate the relative amount of time you spend performing each task in your present job. Relative time spent means the total time you spend doing the task compared with the time you spend on each of the other tasks of your present job.

3. Use a rating of "1" if you spend "very much below average" amount of time on a task. Use a rating of "2" for "below average" time; and so on, up to a rating of "7" if you spend "very much above average" amount of time on the task.

4. Remember, you are to rate ONLY tasks that you have already checked in the first column of pages 1 through 23.

5. Place your rating, according to the 7-point scale, in the right-hand column, headed "Time Spent Doing Task on Present Job."

6. When you have completed all your ratings in the right-hand column of pages 1 through 23, you will have completed this Job Inventory, and you may turn it in.

7. Now turn to page 1 and BEGIN your rating for the right-hand column.

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

		Check if done in present job	Time spent doing these tasks in present job	
A. ORGANIZING AND PLANNING				
1. Maintain cost record	(1*)			(1:14)
2. Maintain credit record	(2)			(15)
3. Maintain a daily or monthly cash balance	(3)			(16)
4. Maintain time record	(4)			(17)
5. Maintain a record keeping system	(5)			(18)
6. Maintain an inventory control system	(6)			(19)
7. Plan a daily or weekly work schedule	(7)			(20)
8. Plan the establishment of a small engine repair business	(8)			(21)
9. Plan the storage area layout	(9)			(22)
10. Plan the service area layout	(10)			(23)
11. Plan the parts department layout	(11)			(24)
12. Schedule appointments	(12)			(25)
NOTE: If any task you perform under this duty is not listed, write it in the space below.				

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

		Check if done in present job	Time spent doing these tasks in present job	
B.	SUPERVISING			
1.	Allocate space and equipment (13)			(26)
2.	Assign individuals to job positions (14)			(27)
3.	Calculate feasibility of repair (15)			(28)
4.	Calculate total cost of repairs (16)			(29)
5.	Complete parts request (17)			(30)
6.	Conduct safety briefings on OSHA (18)			(31)
7.	Control flow of work (19)			(32)
8.	Determine labor cost using a flat rate manual (20)			(33)
9.	Draft correspondence (21)			(34)
10.	Enter work preformed on work orders (22)			(35)
11.	Implement training programs (23)			(36)
12.	Initiate and complete work orders (24)			(37)
13.	Initiate personnel actions (25)			(38)
14.	Keep manuals and special bulletins up to date (26)			(39)
15.	Maintain daily work control logs or status boards (27)			(40)
16.	Orient newly hired personnel (28)			(41)
17.	Prepare requests for shop maintenance (29)			(42)
18.	Prepare requisitions for shop equipment or tools (30)			(43)
19.	Process records on equipment being serviced and repaired (31)			(44)
20.	Release special equipment for testing and adjustment (32)			(45)
21.	Report equipment defects (33)			(46)
22.	Resolve personnel problems (34)			(47)
	(continued)			

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

	Check if done in present job	Time spent doing these tasks in present job
NOTE: If any task you perform under this duty is not		
listed, write it in the space below.		

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

C. SELLING LAWNMOWERS, CHAINSAWS AND OUTBOARD MOTORS		Check if done in present job	Time spent doing these tasks in present job	
1. Advertise a product	(35)			(48)
2. Answer the telephone	(36)			(49)
3. Calculate price to charge	(37)			(50)
4. Close a sale	(38)			(51)
5. Complete a sales slip	(39)			(52)
6. Demonstrate the product	(40)			(53)
7. Display the product to be sold	(41)			(54)
8. Greet the customer	(42)			(55)
9. Handle customer objections	(43)			(56)
10. Operate a cash register	(44)			(57)
11. Provide product information	(45)			(58)
12. Sell parts	(46)			(59)
13. Explain manufacturer's warranty	(47)			(60)
NOTE: If any task you perform under this duty is not listed, write it in the space below.				

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

		Check if done in present job	Time spent doing these tasks in present job	
D. USING A PARTS INVENTORY				
1. Identify a part using a parts catalog	(48)			(61)
2. Identify parts using a microfiche reader	(49)			(62)
3. Locate parts in stock room	(50)			(63)
4. Maintain stock level of parts	(51)			(64)
5. Store parts in proper stock area	(52)			(65)
NOTE: If any task you perform under this duty is not				
listed, write it in the space below.				

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

		Check if done in present job	Time spent doing these tasks in present job	
E. MAINTAINING SHOP TOOLS AND EQUIPMENT				
1. Clean, adjust and service equipment	(53)			(66)
2. Clean hand tools	(54)			(67)
3. Clean the shop	(55)			(68)
4. Order replacement tools	(56)			(69)
5. Maintain bench stock	(57)			(70)
6. Maintain fire protection equipment	(58)			(71)
7. Store shop tools and equipment	(59)			(72)
NOTE: If any task you perform under this duty is not				
listed, write it in space below.				

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

F. SERVICING, MAINTAINING, AND REPAIRING FUEL SYSTEMS		Check if done in present job	Time spent doing these tasks in present job	
1. Remove, clean and reinstall the fuel tank	(60)			(73)
2. Remove, clean and reinstall fuel lines	(61)			(74)
3. Remove, clean and reinstall fuel filter systems	(62)			(75)
4. Service oil bath, foam and dry element air cleaners	(63)			(76)
5. Disassemble, clean and reassemble a pulsation-type carburetor	(64)			(77)
6. Disassemble, clean and reassemble a vacuum-type carburetor	(65)			(78)
7. Disassemble, clean and reassemble a float-type carburetor	(66)			(79)
8. Install a repair kit in a carburetor	(67)			(80)
9. Remove, clean and reinstall the fuel pipe on the vacuum-type carburetor	(68)			(2:1)
10. Remove, clean and reinstall or replace the carburetor throttle	(69)			(2)
11. Measure throttle wear	(70)			(3)
12. Measure choke wear	(71)			(4)
13. Measure float check valve wear	(72)			(5)
14. Check needle valve wear	(73)			(6)
15. Disassemble and reassemble choke linkage	(74)			(7)
16. Check choke linkage for wear	(75)			(8)
17. Adjust carburetor choke linkage	(76)			(9)
18. Adjust carburetor needle valve	(77)			(10)
19. Adjust carburetor idle valve	(78)			(11)
20. Adjust carburetor float valve	(79)			(12)
21. Adjust carburetor throttle	(80)			(13)
22. Adjust the engine idle speed	(81)			(14)
23. Remove and reinstall a carburetor diaphragm (continued)	(82)			(15)

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

		Check if done in present job	Time spent doing these tasks in present job	
24. Remove, clean and reinstall or replace fuel pipes	(83)			(16)
25. Replace worn throttle bushing	(84)			(17)
26. Adjust the float level of a float-type carburetor	(85)			(18)
27. Clean and adjust air vane governor	(86)			(19)
28. Disassemble, clean and reassemble a fuel pump	(87)			(20)
29. Check fuel pump parts for defect or wear	(88)			(21)
30. Replace fuel pump diaphram	(89)			(22)
31. Check fuel cap vent	(90)			(23)
32. Fine tune a carburetor	(91)			(24)
33. Replace carburetor needles and seats	(92)			(25)
34. Determine tolerances for fuel systems components using manufacturer's manual	(93)			(26)
35. Order parts for fuel system using a manufacturer's manual or parts catalog	(94)			(27)
36. Service crankcase breather	(95)			(28)
37. Adjust and/or repair mechanical governor	(96)			(29)
NOTE: If any task you perform under this duty is not listed, write it in the space below.				

*Cumulative Task Number

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

	Check if done in present job	Time spent doing these tasks in present job	
G. SERVICING AND MAINTAINING CHARGING CIRCUITS			
1. Adjust cutout relay (97)			(30)
2. Adjust generator/alternator relay (98)			(31)
3. Check armature for short using an armature growler (99)			(32)
4. Check field windings for shorts (100)			(33)
5. Clean commutator (101)			(34)
6. Lubricate generator (102)			(35)
7. Check and replace generator brushes (103)			(36)
8. Undercut mica on commutator (104)			(37)
9. Replace alternator/generator bearing (105)			(38)
10. Determine wear tolerances using a manufacturer's service manual (106)			(39)
11. Troubleshoot the charging circuit using a manufacturer's guide (107)			(40)
12. Remove, inspect and replace belt pulley (108)			(41)
NOTE: If any task you perform under this duty is not listed, write it in the space below.			

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

		Check if done in present job	Time spent doing these tasks in present job	
H. SERVICING AND MAINTAINING THE STARTING CIRCUIT				
1. Check and refill battery cells with water	(109)			(42)
2. Clean battery terminals	(110)			(43)
3. Clean starter motor commutator	(111)			(44)
4. Charge the battery	(112)			(45)
5. Remove, check and replace or reinstall starter brushes	(113)			(46)
6. Remove and replace or reinstall armature bearings	(114)			(47)
7. Remove and replace battery	(115)			(48)
8. Replace battery cables and terminals	(116)			(49)
9. Test armature and field windings for shorts	(117)			(50)
10. Test battery cells for voltage using volt meter	(118)			(51)
11. Test electrolyte for specific gravity using a hydrometer	(119)			(52)
NOTE: If any task you perform under this duty is not listed, write it in the space below.				

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

Time Spent Scale
1. Very much below average
2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

		Check if done in present job	Time spent doing these tasks in present job	
I. SERVICING AND MAINTAINING MANUAL STARTERS				
1. Check for proper operation	(120)			(53)
2. Check ropes for defects and wear	(121)			(54)
3. Check spring for defects and wear	(122)			(55)
4. Check clutch for defects and wear	(123)			(56)
5. Check friction brake for defects and wear	(124)			(57)
6. Rewind the spring	(125)			(58)
7. Adjust spring tension	(126)			(59)
8. Measure pawls for wear	(127)			(60)
9. Measure wear on friction disk	(128)			(61)
10. Measure wear on engaging mechanism	(129)			(62)
11. Measure pulley wear	(130)			(63)
12. Measure cup for wear	(131)			(64)
13. Disassemble, clean and reassemble the manual starter	(132)			(65)
14. Lubricate the starting mechanism	(133)			(66)
NOTE: If any task you perform under this duty is not listed, write it in the space below				

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

Time Spent Scale
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3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

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		Check if done in present job	Time spent doing these tasks in present job	
J. SERVICING, MAINTAINING OR REPAIRING THE IGNITION SYSTEM				
1. Remove, test, clean and adjust spark plugs	(134)			(67)
2. Select a spark plug replacement	(135)			(68)
3. Remove the engine shroud	(136)			(69)
4. Remove fly-wheel	(137)			(70)
5. Remove the fly-wheel clutch	(138)			(71)
6. Test fly-wheel magnets	(139)			(72)
7. Inspect the fly-wheel key	(140)			(73)
8. Remove dust cover	(141)			(74)
9. Remove and inspect points	(142)			(75)
10. Remove plunger and measure wear	(143)			(76)
11. Measure plunger guide	(144)			(77)
12. Remove and test condenser	(145)			(78)
13. Replace and adjust points	(146)			(79)
14. Adjust armature air gap	(147)			(80)
15. Test an ignition armature	(148)			(3:1)
16. Remove, test and replace or reinstall coil	(149)			(2)
17. Remove and replace magneto plate	(150)			(3)
18. Test and replace or reinstall solid state breakerless magneto	(151)			(4)
19. Test and replace or reinstall solid state capacitor discharge	(152)			(5)
20. Remove, test and replace ignition wires	(153)			(6)
21. Time the ignition system	(154)			(7)
22. Measure armature resistance using an ohm meter	(155)			(8)
23. Test and replace a stator type ignition system	(156)			(9)

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623-281-038	

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4. About average
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6. Above average
7. Very much above average

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
3. In the "Time Spent" column, rate checked (✓) tasks on time spent in your present job.

		Check if done in present job	Time spent doing these tasks in present job	
24. Test and replace a diode rectifier	(157)			(10)
25. Test and replace a switch box (pulse-pak)	(158)			(11)
26. Test and replace a high output coil	(159)			(12)
NOTE: If any task you perform under this duty is not				
listed, write it in the space below.				

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

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5. Slightly above average
6. Above average
7. Very much above average

		Check if done in present job	Time spent doing these tasks in present job	
K. OVERHAULING SMALL ENGINES				
1. Check two cycle engine blocks for leaks	(160)			(13
2. Disassemble and clean block	(161)			(14
3. Remove and inspect pistons for defects or wear	(162)			(15
4. Inspect piston rings for wear or defects	(163)			(16
5. Remove and replace piston rings using ring expander	(164)			(17
6. Select rings using manufacturer's parts guide	(165)			(18
7. Clean piston	(166)			(19
8. Inspect cylinder for defects and wear	(167)			(20
9. Hone cylinder	(168)			(21
10. Ridge ream top of cylinder	(169)			(22
11. Inspect cylinder head for cracks	(170)			(23
12. Remove connecting rods and inspect for wear or warpage	(171)			(24
13. Remove, inspect and replace or reinstall connecting rod bearings or inserts	(172)			(25
14. Measure rod bearing clearance using plastigage	(173)			(26
15. Remove, inspect and replace or reinstall main bearings	(174)			(27
16. Remove, inspect and replace or reinstall a crankshaft	(175)			(28
17. Measure crankshaft and mainbearing clearance using plastigage	(176)			(29
18. Measure bearing wear using "go-no-go" gauge	(177)			(30
19. Measure crankshaft and mainbearing wear using a micrometer	(178)			(31
20. Measure crankshaft wear or warpage using a dial indicator	(179)			(32
21. Measure cylinder wear using a standard ring and feeler gauge	(180)			(33
22. Remove piston pin, bushings and locks	(181)			(34
(continued)				

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

1. Check tasks you perform now (✓).
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5. Slightly above average
6. Above average
7. Very much above average

		Check if done in present job	Time spent doing these tasks in present job	
23. Remove and replace needle bearings	(182)			(35)
24. Remove, inspect for wear and replace or reinstall a camshaft	(183)			(36)
25. Remove and inspect oil seals	(184)			(37)
26. Remove and inspect valves for defect, warpage or wear	(185)			(38)
27. Grind valves to specifications	(186)			(39)
28. Lap valves	(187)			(40)
29. Grind or replace valve seats	(188)			(41)
30. Torque connecting rod bolts to specifications	(189)			(42)
31. Torque head bolts to specifications	(190)			(43)
32. Tie or otherwise secure connecting rod bolts	(191)			(44)
33. Shim crankshaft for clearance	(192)			(45)
34. Torque main bearing bolts	(193)			(46)
35. Remove and replace cam bushings	(194)			(47)
36. Repair damaged thread using helicoil	(195)			(48)
37. Repair damaged thread using a tap and die set	(196)			(49)
38. Repair threads with thread file	(197)			(50)
39. Clean engine parts using a fire resistant chemical	(198)			(51)
40. Install a piston in a cylinder using a ring compressor	(199)			(52)
41. Align timing marks on crankshaft and camshaft	(200)			(53)
42. Inspect and replace valve stem guides	(201)			(54)
43. Remove oil sump	(202)			(55)
(continued)				

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

Page 16 of 23 Pages

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
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2. Below average
3. Slightly below average
4. About average
5. Slightly above average
6. Above average
7. Very much above average

	Check if done in present job	Time spent doing these tasks in present job
NOTE: If any task you perform under this duty is not		
listed, write it in the space below.		

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

Par 17 of 23 Pages

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

1. Check tasks you perform now (✔).
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		Check if done in present job	Time spent doing these tasks in present job	
L.	SERVICING AND MAINTAINING LAWNMOWER ASSEMBLIES			
1.	Adjust clutch control rod (203)			(56)
2.	Adjust height of cut (204)			(57)
3.	Adjust reel and bed knife (205)			(58)
4.	Align reel type mower (206)			(59)
5.	Adjust reel bearings (207)			(60)
6.	Balance rotary blade (208)			(61)
7.	Check the cutter blade tolerance (209)			(62)
8.	Disassemble and reassemble reeltype mower (210)			(63)
9.	Disassemble and reassemble rotary mower (211)			(64)
10.	Grind bed knife (212)			(65)
11.	Grind reel (213)			(66)
12.	Grind rotary blade (214)			(67)
13.	Inspect drive pulley (215)			(68)
14.	Inspect drive roller (216)			(69)
15.	Inspect mower for wear using manufacturer's manual (217)			(70)
16.	Inspect V-belt (218)			(71)
17.	Lubricate a mower (219)			(72)
18.	Select V-belt using manufacturer's guide (220)			(73)
19.	Inspect and repair drive assembly (221)			(74)
20.	Inspect and repair brake assembly (222)			(75)
21.	Inspect and repair clutch assembly (223)			(76)
22.	Inspect and repair steering assembly (224)			(77)
	(continued)			

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

Time Spent Scale
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4. About average
5. Slightly above average
6. Above average
7. Very much above average

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

1. Check tasks you perform now (✓).
2. Add any tasks you do now which are not listed.
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	Check if done in present job	Time spent doing these tasks in present job
NOTE: If any task you perform under this duty is not		
listed, write it in the blank space below.		

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

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		Check if done in present job	Time spent doing these tasks in present job	
M.	SERVICING AND MAINTAINING CHAIN SAW ASSEMBLIES			
1.	Adjust chain (225)			(78)
2.	Check cutting depth with gage (226)			(79)
3.	Clean chain with solvent (227)			(80)
4.	Clean out gullets (228)			(4:1)
5.	Compare cutter to a new one to determine wear (229)			(2)
6.	Compare each drive link to a new one (230)			(3)
7.	Lubricate chain (231)			(4)
8.	Lubricate roller nose bar (232)			(5)
9.	Inspect rails for wear (233)			(6)
10.	Inspect for tight joints (234)			(7)
11.	Inspect sprocket for wear (235)			(8)
12.	Replace roller side plates (236)			(9)
13.	Remove chain from bar (237)			(10)
14.	Replace broken drive link (238)			(11)
15.	Replace a roller on a bar (239)			(12)
16.	Select proper file or stone for sharpening a chain (240)			(13)
17.	Select proper oil for chain using a chart (241)			(14)
18.	Service solidnose and roller nose bars (242)			(15)
19.	Sharpen a saw chain (243)			(16)
20.	Trouble shoot cutter problem (244)			(17)
21.	Use straightedge to check worn bar rails (245)			(18)
	(continued)			

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

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	Check if done in present job	Time spent doing these tasks in present job
NOTE: If any task you perform under this duty is not listed, write it in the space below		

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
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		Check if done in present job	Time spent doing these tasks in present job	
N.	SERVICING, MAINTAINING AND REPAIRING OUTBOARD ENGINES, DRIVES AND ACCESSORIES			
1.	Clean outboard motors (246)			(19)
2.	Disassemble and assemble gear drives (247)			(20)
3.	Lubricate lower unit (248)			(21)
4.	Inspect drive shaft housing and gear case (249)			(22)
5.	Inspect exhaust systems (250)			(23)
6.	Clean and replace exhaust systems (251)			(24)
7.	Inspect and install propellers and shear pins (252)			(25)
8.	Inspect and replace, oil and grease seals (253)			(26)
9.	Inspect and replace bearings (254)			(27)
10.	Inspect and clean the water pump or impeller (255)			(28)
11.	Inspect and clean the water tube (256)			(29)
12.	Inspect the bearing and drive shaft (257)			(30)
13.	Inspect water tube "O" ring (258)			(31)
14.	Install new cap liners (259)			(32)
15.	Install a neutral or ratchet clutch (260)			(33)
16.	Remove the drive shaft pinion (261)			(34)
17.	Remove and replace retainer and propeller (262)			(35)
18.	Remove engine shroud (263)			(36)
19.	Remove powerhead from drive shaft (264)			(37)
20.	Remove swivel bracket (265)			(38)
21.	Replace water pump (266)			(39)
	(continued)			

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
DOT(S)	625.281-042	623.281-038	

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		Check if done in present job	Time spent doing these tasks in present job	
22. Replace the water tube	(267)			(40)
23. Select a gear lubricant	(268)			(41)
24. Select grease for greasing transom steering bearings	(269)			(42)
25. Remove gas tank pickup tube for cleaning	(270)			(43)
NOTE: If any task you perform under this duty is not				
listed, write it in the space below.				

*Cumulative Task Numbers

JOB INVENTORY (duty-task list)

DOT(S)	625.281-034	625.281-032	
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		Check if done in present job	Time spent doing these tasks in present job	
0.	WELDING AND CUTTING METALS			
1.	Select welding equipment to be used	(271)		(44)
2.	Select a welding rod	(272)		(45)
3.	Select a heat range for electric welding	(273)		(46)
4.	Prepare the metals to be welded	(274)		(47)
5.	Select oxygen and acetylene pressures for oxyacetylene welding or brazing	(275)		(48)
6.	Weld steel using an electric welder	(276)		(49)
7.	Weld aluminum using a heli-arc weld	(277)		(50)
8.	Bronze weld aluminum using an oxyacetylene welder	(278)		(51)
9.	Set-up an oxyacetylene welder	(279)		(52)
10.	Cut metal using an oxyacetylene cutting torch	(280)		(53)
11.	Select welding and cutting tips	(281)		(54)
12.	Clean cutting and welding tips	(282)		(55)
13.	Select fluxes	(283)		(56)
14.	Remove a frozen pulley or collar using a heating head	(284)		(57)

NOTE: If any task you perform under this duty is not listed, write it in the space below

→ Go back to page vii and follow procedure B.

→ When you have completed all ratings in this column you will have completed the job inventory. Please return booklet in the enclosed envelope. Thank you.

*Cumulative Task Numbers

SUPPLEMENT 1

SAMPLE SMALL ENGINE MODULE

SMALL ENGINE REPAIR

SHARPENING A ROTARY BLADE

Introduction: In order to keep the rotary lawnmower in good operating condition, it is necessary to sharpen the blade periodically. Safety and precision are very important in this procedure. In this module, you will learn how to sharpen and balance a rotary mower blade.

Directions: If you think you are already able to perform this task, arrange with your instructor about doing the Check-Out Activities

OR

If you need to complete learning activities in order to do the tasks, go through them in the order listed.

Objective: Using standard tools, grinder and manufacturer's specifications, sharpen and balance a rotary blade. The sharpened blade should be ground to an angle between 28 and 32 degrees. (#93)

Learning Activities:

1. READ Job Sheet #1, "Sharpen a Rotary Mower Blade."
2. VIEW slide presentation _____ on sharpening a rotary blade.
3. CHECK YOUR KNOWLEDGE of sharpening a rotary blade by taking Student Self-Check I.
4. ARRANGE with your instructor to complete this module by going through the Check-Out Acitivites.

Check-Out Activity: Sharpen and balance a rotary blade provided by your instructor.

EQUIPMENT MAINTENANCE
UNIT I

JOB SHEET #1-SHARPEN A ROTARY MOWER BLADE

I. Tools and materials

A. Safety glasses

B. Hand tool assortment

C. Large flat file with handle

D. Vise

E. Blade balancer

F. Framing square

G. Shop towels

H. Grinder

I. Face shield

II. Procedures

(NOTE: Be sure and remove spark plug wire from plug and ground it to the block before removing blade.)

A. Gather tools and equipment

B. Remove blade from mower

(NOTE: Be sure and place all spacers and washers together in the order of removal for ease in reassembly.)

C. Clean blade

(NOTE: Remove any built up grease or clippings that will effect the balancing to be done later.)

D. Check for cracks or chips

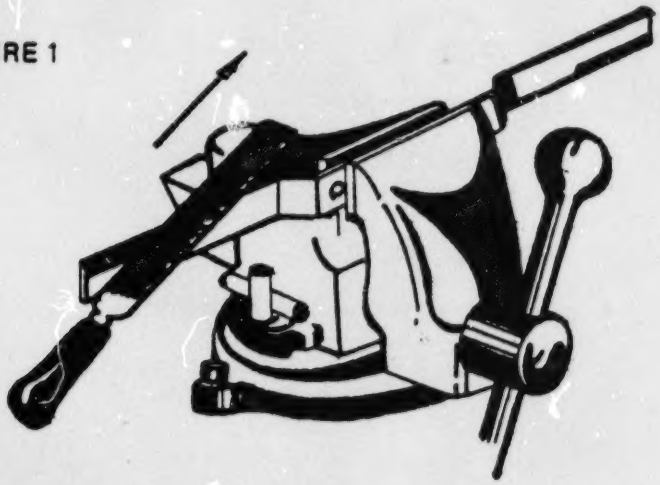
(NOTE: If blade has cracks or large pieces chipped off replace with new blade.)

E. Hand sharpen a blade with a file

JOB SHEET #1

1. File at approximately 45° angle to blade (Figure 1)

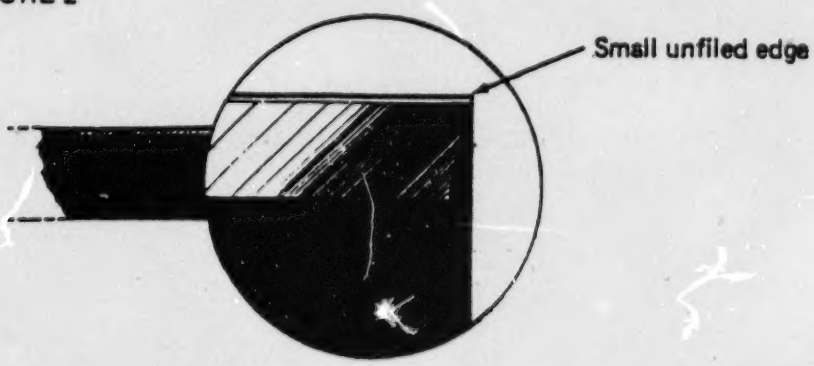
FIGURE 1



(NOTE: Only push a file, and always lift it off the blade on the back stroke.)

2. Continue filing until cutting surface is clean and only a small even blunt edge exists (Figure 2)

FIGURE 2



(NOTE: If the blade is sharpened to a point the sharp edge easily rolls over and can chip off.)

3. Turn blade over and sharpen other cutting edge

(NOTE: Never file the back side of a blade.)

JOB SHEET #1

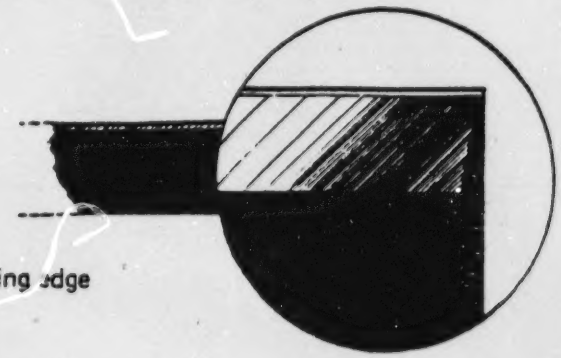
F. Sharpen a blade with a grinder

1. Put on face shield
2. Put all grinder guards and shields in the correct location
3. Dress grinder wheel
4. Adjust tool rest to match existing contour off sharpened portion of blade
5. Turn on grinder
6. Gently slide blade cutting edge along wheel surface

   (NOTE: Do not push hard on blade, and keep a bucket of water handy to keep blade cool while sharpening.)

7. Continue till small blunt edge is left (Figure 3)

FIGURE 3



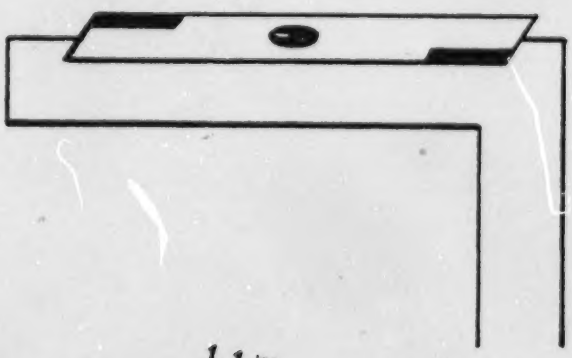
8. Sharpen other cutting edge
9. Turn off grinder

G. Check blade for straightness

(NOTE: There are magnetic holders and gauges designed for this job; you can however use a framing square as described below.)

1. Place blade on edge of framing square (Figure 4)

FIGURE 4



JOB SHEET #1

2. Check between blade and edge of square for warpage

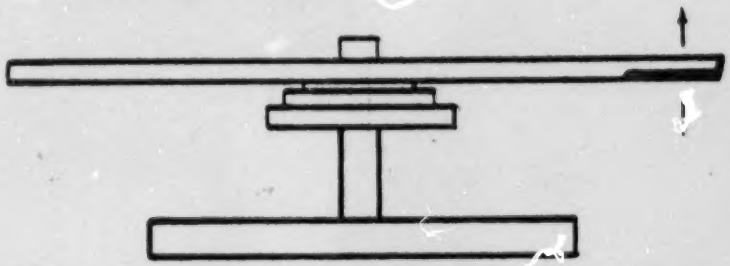
3. Straighten blade if necessary

(NOTE: Do not hit blade with a tempered hammer. Place blade in vise and apply pressure to straighten it.)

H. Check blade balance

1. Place blade on balancer (Figure 5)

FIGURE 5



2. File cutting edge on lowest end of blade until blade sits level

(NOTE: Be sure and maintain small blunt edge.)

I. Have instructor evaluate work

J. Replace blade on mower

Student Self-Check I

Fill in the blank with the correct response. Correct answers are given below.

1. Before removing the blade, remove _____ and ground it to the block.

2. Place all spacers and washers together in the order of _____ for ease in reassembly.

3. Remove any built up _____ or _____ that will affect the balancing later.

4. Only _____ a file and always life it off the blade on the back stroke.

5. Never file the _____ side of a blade.

6. Do not hit blade with a _____.

ANSWERS: 1. spark plug wire 2. removal 3. grease, clippings 4. push
5. back 6. tempered hammer

SUPPLEMENT 2

LISTING OF
AUTO MECHANICS AND TRACTOR MECHANICS MODULES

ADAPTABLE TO
DIESEL

MODULES ADAPTABLE TO DIESEL EQUIPMENT REPAIR

AM-0	Using Competency Based Modules
AM-0A	Safety in the Shop
AM-0B	Measuring with the Micrometer Caliper
AM-0C	Identify, Inspect, Clean & Repair Hand Tools
AM-0D	Identify, Inspect, & Repair Cutting Tools
AM-1	Servicing and Replacing Batteries
AM-2*	Evaluating Charging System
AM-3	Servicing Regulators
AM-4	Replacing Generators & Alternators
AM-5	Repairing Generators & Alternators
AM-6	Testing Cranking System
AM-7	Repairing & Replacing Switches & Relays
AM-8*	Repairing Starters
AM-25*	Checking Cooling System
AM-26	Replacing Hoses, Thermostats & Core Plugs
AM-27	Replacing Cooling System Components
AM-28	Inspecting & Replacing Exhaust Components
AM-33	Changing Engine Oil and Filter
AM-37	Adjusting Clutches
AM-38	Maintaining Universal Joints
AM-62	Inspecting Lighting System
AM-80	Cleaning & Chemical Testing Cooling System
AM-81	Removing & Repairing Radiator
AM-97	Repairing Mechanical Clutches
AM-98	Repairing Hydraulic Clutches
AM-99	Servicing Speedometers
AM-100	Replacing Pinion Seals
AM-111	Replacing King Pins and Bushings
AM-122	Repairing Air Conditioning Electrical Components
AM-123	Refrigeration Safety and Principles
AM-124*	Testing Air Conditioning Pressure and Levels
AM-125*	Servicing Air Conditioning Systems
AM-126*	Diagnosing Air Conditioning Malfunctions
AM-127*	Replacing Compressors
AM-128*	Replacing Compressor Seals
AM-129*	Repairing Air Conditioning Compressors
AM-130*	Replacing Drier and Condenser
AM-131*	Replacing Expansion Valves
AM-132*	Replacing Evaporator Control Valves
AM-133	Repairing Air Conditioning Controls
AM-134	Repairing Climate Control Systems
AM-135	Diagnosing Heating System Malfunctions
AM-136	Replacing Heater Core & Hoses
AM-137	Replacing Heater Controls

* Slide Tapes

TM-19	Replacing Ring Gear on the Flywheel
TM-25	Servicing the Governor
TM-27	Servicing Diesel Fuel Filter
TM-28*	Servicing a Diesel Transfer Pump
TM-29	Servicing a Diesel Injection Pump
TM-30-3*	Servicing a Diesel Fuel Injector
TM-31*	Bleeding Diesel Fuel System
TM-32	Timing a Fuel Injection Pump
TM-33	Servicing a Turbocharger
TM-41	Testing Hydraulic System
TM-42	Maintaining Fluid in Hydraulic System
TM-43	Servicing a Hydraulic Pump
TM-44	Servicing Hydraulic Valves & Fittings
TM-45*	Servicing Hydraulic Cylinder
TM-46	Servicing Hydraulic Motor
TM-47	Servicing Hydraulic-Assist Transmission
TM-48	Servicing Hydraulic-Drive Pump & Motor
TM-50*	Servicing Power-Take Off
TM-51	Servicing Drive Shaft
TM-66	Adjusting Ring Gear and Pinion
TM-69	Adjusting End Play in Final Drive
TM-70	Servicing Bearings in Final Drive
TM-73	Servicing Planetory-Type Drive

* Slide Tapes

SUPPLEMENT 3

INITIAL STATUS REPORT ON DIESEL EQUIPMENT REPAIR

INITIAL STATUS REPORT

DIESEL EQUIPMENT REPAIR

In March, 1975, the Course Outlines, Course Objectives and Course Philosophies were collected from the Diesel Mechanics Programs in the state. Representatives from industry reviewed them and recommended that the programs be updated to include the following:

1. Engines	Students need a good working knowledge of engines and the fuel, cooling, lubrication, intake and exhaust systems. There needs to be less emphasis on rebuilding.
2. Electricity	Industry representatives felt that electricity was the weakest area in the programs. They expressed a need for extensive training in electrical components and diagnostic procedures.
3. Hydraulics	Students need a good background in hydraulics with concentration on reading pressure gauges and diagnosing malfunctions. Must be able to repair controls and lines.
4. Suspension Systems	Students need to be familiarized with different types of suspension systems, and repair procedures for components of both track and wheeled vehicle suspension systems. Wheel alignment and steering need to be included.
5. Drive Line and Final Drives	Students should be familiar with all types of drive lines and capable of repairing and testing components.
6. Brakes	Students must be able to repair all types of brake system components, including air and hydraulic brakes.
7. Comfort Controls	Students must be able to diagnose and repair air conditioning and heating systems on all types of equipment.
8. Human Relations & Communicative Skills	Must be stressed in all phases of program.
9. Clerical Tasks	Students should be capable of ordering parts and completing shop work orders and reports.

10.	Diagnostic Procedures	Students must be able to diagnose problems and isolate malfunctioning component before making repairs.
11.	Welding	Basic fundamentals of welding should be sufficient.

The representatives felt that each student should be well grounded in the basics of diesel equipment repair and that specialization in a particular field should be the responsibility of the company that hires the student.

PREPARED BY: Bruce W. Shaeffer

SUPPLEMENT 4

LISTING OF DIESEL MODULES DEVELOPED

LISTING OF DIESEL MODULES

1.	H-1	Inspecting reservoirs and coolers
2.	H-2	Changing hydraulic oil
3.	H-3	Servicing hydraulic fluid filters
4.	H-4	Analyzing hydraulic systems
5.	H-5	Maintaining hydraulic cylinders
6.	H-6	Replacing hydraulic lines and fittings
7.	H-7	Repairing hydraulic controls and valves
8.	H-8	Rebuilding accumulators
9.	H-9	Rebuilding hydraulic pumps
10.	H-10	Rebuilding hydraulic motors
11.	E-1	Electrical terminology
12.	E-2	Servicing and replacing batteries
13.	E-3	Evaluation of the charging system
14.	E-4	Servicing changing system regulators
15.	E-5	Replacing generators and alternators
16.	E-6	Repairing generators and alternators
17.	E-7	Testing cranking systems
18.	E-8	Repairing and replacing switches and relays
19.	E-9	Repairing starters

SUPPLEMENT 5

PROGRAM SEQUENCE MASTER SHEET FOR SMALL ENGINE REPAIR

OBJECTIVE #	MODULE #	MODULE TITLE
	1	Cleaning, adjusting & servicing equipment
	2	Cleaning, maintaining & storing shop tools
27	3	Cleaning a small engine repair shop
	4	Maintaining fire protection equipment
	5	Maintaining engine parts bath
41	6	Cleaning crankcase breather
39	7	Disassemble, clean & reassemble fuel pump
34,35	8	Disassemble, clean & reassemble carburetors
38	9	Remove & replace carburetor diaphragm
29,30	10	Remove & replace fuel system components
36,37	11	Disassemble, clean, & reassemble float-type carburetors
31,32,33	12	Servicing air cleaners
40	13	Fine tune carburetor and adjust linkages
48	14	Testing a charging system
49,50	15	Replacing generator & drive belts
42,52	16	Adjusting voltage regulator
43,45	17	Testing & cleaning armature
44	18	Testing & replacing field windings
46,47	19	Replacing brushes & bearings
51,53	20	Testing & replacing diodes & rectifiers
54	21	Servicing batteries
55	22	Testing & maintaining starting circuit
	23	Rebuilding starter motors
56,57,63	24	Repairing manual starters
58,59,61	25	Replacing starter clutches & brakes
60,62	26	Replacing starter drives
64	27	Manintaining & servicing spark plugs
65,68	28	Remove, inspect & replace flywheel

OBJECTIVE #	MODULE #	MODULE TITLE
66,67	29	Remove & replace points & condenser
69,70	30	Testing & replacing coils & ignition wires
71	31	Timing the ignition system
73	32	Testing a diode rectifier
74	33	Testing a capacitor discharge ignition system
75	34	Testing & replacing safety switches
79,89	35	Reconditioning cylinders
76,77	36	Replacing pistons & rings
78	37	Replacing a cylinder
81,83	38	Replacing crankshafts & seals
82	39	Replacing camshafts
80	40	Replacing connecting rods
84,85,86	41	Servicing valves
87,88	42	Repairing damaged threads
90	43	Installing a short block
	44	Identifying parts using parts catalog
	45	Identifying parts using microfiche reader
25	46	Identifying interchangeable parts
26	47	Obtaining parts from stock room

SUPPLEMENT 6

PROGRAM SEQUENCE MASTER SHEET
FOR

AIR CONDITIONING MODULES
ADAPTABLE TO

APPLIANCE REPAIR

AIR CONDITIONING MODULES ADAPTABLE TO APPLIANCE REPAIR

AC-6	Soft Soldering
AC-2	Brazing Joints
AC-3	Adjusting Door on Refrigerators and Freezers
AC-4	Purging a Refrigerant System
AC-5	Repairing Leaks
AC-6	Replacing Refrigeration Tubing
AC-7	Repairing Refrigeration Tubing
AC-8	Checking Capacitors
AC-9	Servicing Electric Motors
AC-10	Leveling Cabinets
AC-11	Checking Refrigerant
AC-12	Checking Electricity
AC-13	Working with Electricity Components, Symbols, and Diagrams
AC-14	Measuring Resistance
AC-15	Measuring Voltage
AC-16	Measuring Current
AC-17	Apply Basic Electrical Theory
AC-18	Working with Series Circuits
AC-19	Working with Parallel Circuits
AC-20	Working with Combination Circuits
AC-21	Checking for Magnetism and Electromagnetism
AC-22	Working with Relays and Solenoids
AC-23	Checking Characteristics of Alternating Current
AC-24	Working with Transformers
AC-25	Working with Single-Phase AC Induction Motors
AC-26	Working with Three-Phase AC Induction Motors
AC-27	Checking Electrical Wiring
AC-28	Using Electrical Servicing Equipment
AC-29	Evacuating and Refrigerant System
AC-30	Transferring Refrigerants
AC-31	Charging a Refrigeration System
AC-32	Replacing Filter-Driers
AC-33	Correcting Restrictions in Capillary Tube
AC-34	Replacing Capillary Tube
AC-35	Checking and Replacing Current Relays
AC-36	Checking and/or Replacing Compressor Overload
AC-37	Checking Open-Type Compressors
AC-38	Checking Operation of Compressor with Service Valves
AC-39	Testing Compressor
AC-40	Cleanup after Burnout
AC-41	Adding and Removing Lubrication Oil
AC-42	Replacing Semi-Hermetic Compressor
AC-43	Replacing Hermetic Compressor
AC-49	Replacing Fan
AC-50	Replacing Thermostat
AC-51	Replacing Breaker Strips around Doors
AC-79	Troubleshooting Electrical Circuits
AC-100	Repairing Automatic Ice Makers
AC-101	Servicing Commercial Automatic Ice Makers
AC-119	Applying for a Job
AC-120	Supervising Experience

SUPPLEMENT 7

LISTING OF AUTO-DIESEL MODULES DEVELOPED

MODULE NO.	TITLE
1	Using Competency Based Modules
2	Practicing Safety in the Shop
3	Measuring with Micrometer Calipers
4	Identifying, Inspecting, Cleaning, and Repairing Hand Tools
5	Identifying, Inspecting and Repairing Cutting Tools
6	Drilling Holes with Drill Press
7	Soldering Joints and Splices
8	Cutting Threads with Taps and Dies
9	Identifying Common Fasteners
10	Completing a Personal Information Sheet
11	Servicing and Replacing Batteries
12	Inspecting and Replacing Exhaust System Components
13	Checking Fuel Pump Flow and Pressure
14	Inspecting and Replacing Cooling System Components
15	Inspecting Engine Lubrication System
16	Evaluating Charging System
17	Servicing Charging System Regulators
18	Repairing and Replacing Generators and Alternators
19	Testing and Replacing Starting Circuit Components
20	Rebuilding Starters
21	Changing Engine Oil and Filter
22	Adjusting Valves and Diagnosing Malfunctions
23	Describing the Operating Principles of Diesel Engines
24	Identifying the Major Subsystems of Diesel Engines

MODULE NO.	TITLE
25	Bleeding the Fuel System
26	Replacing the Fuel Pump and Fuel Filter
27	Replacing Injector Lines and Injectors
28	Making Adjustments on Fuel System Components
29	Replacing Injection Pump
30	Replacing Injection Pump Adapter Seal
31	Testing Injection Pump Housing Fuel Pressure
32	Performing Compression Test on Diesel Engine
33	Replacing Intake Manifold
34	Replacing Valve Train Components
35	Replacing Cylinder Heads
36	Disassembling and Inspecting Cylinder Head
37	Grinding the Valves and Seats
38	Assembling Cylinder Head
39	Replacing Valve Springs with Head Installed
40	Replacing Oil Pump and Vacuum Pump
41	Removing Cylinder Ring Ridge
42	Removing and Inspecting Pistons and Rods
43	Replacing Piston Pins and Rings
44	Inspecting Cylinders
45	Inspecting Crankshaft and Replacing Bearings
46	Installing Piston and Rod Assemblies
47	Replacing Front Cover and Oil Seal
48	Replacing Timing Chain and Gears
49	Replacing Camshaft and Bearings
50	Replacing Main Bearing Seal